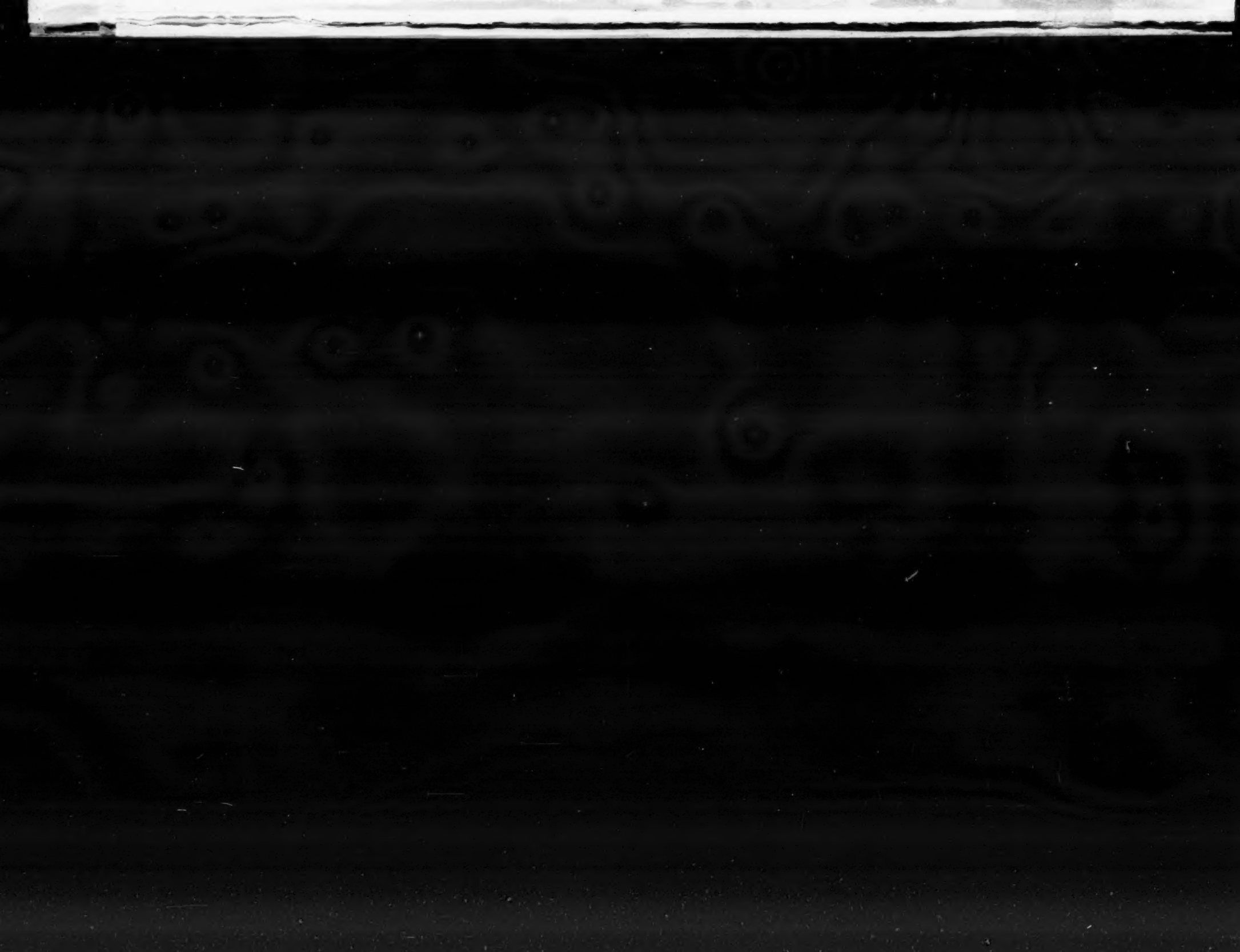
AMERICAN BEE JOURNAL

JANUARY, 1919

BEE AND HONEY DISPLAY AT THE KANSAS STATE FAIR, HUTCHINSON, SEPTEMBER 14 TO 21
The exhibitors were: A. D. Raffington, J. A. Nininger, Roy Bunger, A. V. Small, W. A. McCormick and Cloverdale Apiary



AMERICAN BEE JOURNAL

VOL. LVIII—NO. 1 HAMILTON, ILL., JANUARY, 1919 MONTHLY, $1.00 A YEAR

HONEY PRODUCTION IN KANSAS

Glimpses of Conditions in the Sunflower State, Where Alfalfa and Sweet Clover Are Rapidly Extending the Area Where Beekeeping is Commercially Profitable

THOSE whose impressions of Kansas have been formed from tales of disaster from drought and grasshoppers that overtook the early settlers of a generation ago, until it came to be known as "Bleeding Kansas," will hardly be prepared for the real Kansas as it is today. Big fields of alfalfa and wheat, herds of sleek cattle and fat hogs are making of Kansas one of the richest of the agricultural States. It is the extension of the area devoted to alfalfa and sweet clover that is attracting the attention of the beekeepers to that State. The Kansas climate is hot and dry during the summer months. It often happens that there is a deficiency of moisture during the crop season. Alfalfa and sweet clover will both endure continued dry weather without serious injury, once they are well established. The extreme heat, together with a dry atmosphere seem to furnish the ideal condition for secretion of nectar from both these plants. If only sufficient moisture remains at the roots to maintain the vigor of the plants a honey crop is almost unfailing under these conditions. The root system of the common white clover or Dutch clover is too shallow to survive the dry summers, except for an occasional season with more than average rainfall. White clover is not much depended upon as a source of honey, and where sweet clover or alfalfa are not grown honey production is an uncertain business. Horehound, heartsease and horsemint are additional sources in many parts of the State which go far to insure success.

As yet the suitable localities for commercial beekeeping are not large in extent. One county may contain good bee pasture, while the next may furnish insufficient pasturage for large apiaries. Like all the States in the central west, beekeeping is in a state of change from the back-yard row of hives to the commercial apiary. In only a few localities are there large commercial apiaries. The success of a good beekeeper is the best remedy for box hives. Where a man is making a conspicuous success of honey production and it is apparent that he is making a good living from the business, the box-hive beekeeper is quite likely to become dissatisfied with the small returns possible with such primitive equipment and either improve his methods or abandon the bees altogether. This is especially true in good farming country where general prosperity is the rule. A man who keeps other equipment on his farm up-to-date, is not proud to have a lot of bees in boxes under his apple trees when his neighbor has good hives and gets a far larger return from the apiary. The writer has noticed this tendency in every locality where commercial beekeeping is being carried on successfully. There are fewer beekeepers in such localities every year, because of the dropping out of the old-timer who does not have sufficient interest to master the new way.

Commercial orcharding is being de-

A relic of the old days. Closed end frames that were wired together serve the purpose of a hive. With a board for a top, no body was used.

veloped quite profitably in Kansas and in the vicinity of the large orchards beemen sometimes find excellent locations. The Baxter brothers combine beekeeping with apple growing near Ft. Leavenworth. While this kind of combination offers very satisfactory possibilities, there are but few men as yet who have developed the combination on an extended scale. The fruit men are no longer inclined to overlook the value of the bees at blooming time, and not infrequently an orchardist and a beekeeper will combine forces to mutual advantage.

An article in our November issue gave an account of the special conditions in the Arkansas valley. Similar locations are to be found in the valleys of some of the smaller streams in the eastern section of the State. At Emporia the boys' and girls' clubs, under the leadership of Charles A. Boyle, have a membership from all parts of the county. It is readily apparent that members in some sections of the county have a great advantage over others, because of a more favorable location. At Augusta, Carl F. Buck has several outyards which yield a good surplus almost every year. Almost anywhere in eastern Kansas there seems to be a sufficient flora to support the bees, but the amount of sweet clover and alfalfa within reach seems to determine the surplus over most of the territory where the writer has visited.

At Eskridge, Roy Bunger and wife devote their entire time to beekeeping. They are buying large numbers of bees in box hives and transferring them, thus removing many uncared for bees from the locality, while increasing their own apiaries. Bunger is assisting many of his neighbors in getting their bees in shape for proper management.

At Blue Rapids the writer attended a field meeting which was attended by an enthusiastic lot of beekeepers, both men and women. W. E. Axtell, of that place, has been influential in developing local interest in field meetings at that point. While Mr. Atkins was engaged in extension work in Kansas, under the U. S. Department of Agriculture, the Blue Rapids beekeepers made good use of him in connection with their field meetings. Although extension work has been under way for only one season, it has shown results which are highly pleasing to those who have been influential in getting it started. The Kansas boys' and girls' bee clubs under Mr. Boyle's leadership have been among the most successful and have attracted wide attention. We plan to give an extended account of the organization and results of this club work in a later issue.

The study of locality as applied to beekeeping offers some very interesting possibilities. The fact that a considerable variety of well-known honey plants are present does not always insure a crop. The influence of soil and climatic conditions is far more important than has been generally understood. Kansas is farther west than Missouri and has a lighter rainfall, yet apparently Kansas is by far the better State for honey production. The writer is inclined to regard Kansas and Nebraska as among the best States for beekeeping. True, neither of them is, as yet, far advanced in the establishment of commercial apiaries, but the few extensive honey producers are getting large crops and with surprising regularity. It should be borne in mind, however, that there are very large areas in both States that are not suited to beekeeping on a large scale. The prospective apiarist should be exceedingly careful in choosing a location in either State.

The hollow log hive has not yet disappeared from Kansas.

Roy Bunger and wife, extensive honey producers at Eskridge.

Field meeting of Kansas beekeepers at Blue Rapids.

The Langstroth and Jumbo Hives

By G. Bohrer

ON the first page of the American Bee Journal for November appears the picture of Moses Quinby and an article by the editor. The picture and article bring back to my memory a conversation I had with Mr. Quinby at a convention of beekeepers held at Cleveland, Ohio, during the winter of 1872. I had used the Quinby hive. It was of the eight-frame pattern. The frames of this hive were two or more inches deeper than the Langstroth frame and an inch or more longer. I asked him why he made his frame both deeper and longer than the Langstroth frame. In reply he said: "Where I reside, in New York, the winters are long and the cold snaps

Apiary of O. A. Keene, Secretary of the Kansas Association.

are protracted, and you know bees go into winter at the lower and front part of the hive. In case they consume all the honey in the combs occupied, back to the rear end of the hive, and the combs on either side of the cluster of bees are covered with frost, they cannot reach it and will perish of starvation. With the frames as I use them," said he, "there is more honey above and to the rear of the cluster."

His logic could not be controverted successfully. I at once concluded to use his frames more extensively than I had up to that time. But before I did so I determined to move from where I then resided to central Kansas, which I found not adapted to beekeeping, as there were no honey-yielding plants in this part of the State. I therefore kept no bees until fruit trees began to bear and alfalfa had been introduced. Then I began again keeping bees and have adopted the Jumbo hive body as a broodnest. Bees winter quite well in it. In what are known as the Southern States the Langstroth frame is deep enough, the winters being shorter and milder. So there is no real danger of the bees being caught in the rear end of the hive with the combs frost-covered on either side of the cluster.

Like the writer of the article I have referred to, I find the Jumbo hive containing ten frames better adapted to brood rearing, as it affords more cell room for the use of a prolific queen. A queen that cannot populate a brood nest as large as the 10-frame Jumbo hive is not likely to be of much value.

I have used, and am still using, a few 14-frame Langstroth hives, as such hives afford about as much cell room as the Jumbo 10-frame hive. I find that nearly all the queens in these 14-frame hives fill the cells about as full of brood as the Jumbo. I use these hives for storage purposes by piling one to three bodies on top of each other. With a strong colony of bees in the lower story, they care for the honey until I get ready to extract, which is not at all times convenient.

As a super I use the standard Langstroth hive body, which is a fraction over two inches deeper than the super of the Dadant hive.

As to the use of the queen excluder, I find it almost unnecessary on the Jumbo hive, while on the Langstroth hive about all the really prolific queens go above in search of cells to lay in. So I use the excluder on the few Langstroth hives I have. I have, however, so far failed to notice that the excluder impedes to appreciable extent the matter of ventilation.

In regard to requeening, I have left the bees to attend to this duty. I had one queen to do good work for three seasons. The fourth season the bees superseded her. As far as my observations have enabled me to judge, the bees are not likely to supersede a queen unless she shows unmistakable evidence that she is falling short in keeping up the ordinary strength of the colony.

I have been a patron of the American Bee Journal ever since its first copy was published, and have kept bees during all these years. except the first ten years after locating in Kansas.

The past season, with hives of the capacity I have mentioned, I took, with an extractor, from nine colonies of bees and their increase, 1,250 pounds of fine alfalfa honey and sold nearly all of it at 25 cents per pound.

Chase, Kans.

(Dr. Bohrer is 86 years old, just a little younger than Dr. Miller, and about as vigorous.—Editor.)

A Letter From Ohio

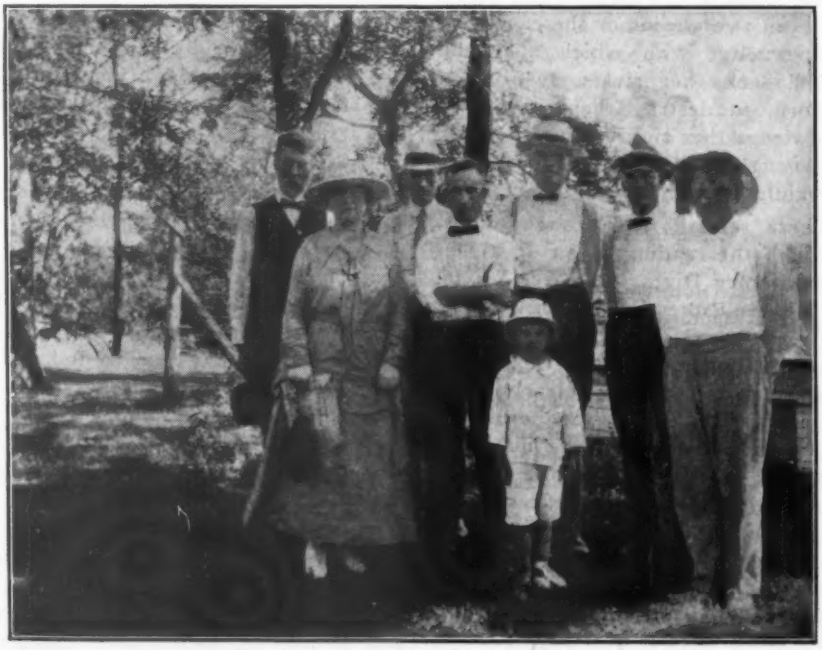
Having kept bees periodically for forty years, I am writing the following suggestions:

Why not use a double or continuous frame for the brood-chamber, so that the queen, being easily disturbed by obstructions, could have continuous laying space in upper and lower stories? The result of this plan is to increase the amount of bees as well as the storage of honey.

My way of introducing virgin queens is to take away all the brood and eggs and make the bees anxious for a queen.

For wintering, it is my opinion that bees are often covered too warm, or rather too much moisture is held by the covering. This freezes and later melts to drip down over the cluster, making moldy combs.

J. A. DOUGHERTY,
California, Ohio.



A group of bee lovers at the Keene apiary at Topeka.

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THE EDITOR'S VIEWPOINT

The Deadly Female

When Kipling wrote that "the female of the species is deadlier than the male," he probably had not been informed as to the truth of that assertion in the generation of the bee. We all know that the male or drone has no sting, that he is perfectly harmless, trusting only to his power of flight to sustain him in his amorous propensities. On the other hand we know that every neuter or worker is an undeveloped female, each possessing a sting capable of inflicting unpleasant wounds and of killing other workers, besides insects, mice, etc. The perfect females, the queens, who have a curved sting, are not fitted for defending themselves against any attacks except those of other fully developed female bees; but those who have witnessed the fights between two queens or the eagerness and cruelty with which a young queen seeks her rivals, even when unborn, to destroy them, must acknowledge that the Kipling assertion is true, that the female honeybee is certainly "deadlier than the male."

These remarks are brought about through the reading of an article in the Literary Digest of November 16, in which Professor Glaser, of the University of Michigan, quotes genealogical studies by Major Charles B. Davenport, "indicating clearly that efficiency in fighting is far more likely to be passed along the maternal than the paternal line of the family. The genius of Caesar, the career of Napoleon, the brutality of Nero, are all traceable to maternal inheritance."

But although the female of the bee is "deadlier than the male," there are some peculiarities of inheritance which do not indicate similar results to those quoted above, by the authorities ascribing deadlier propensities on the maternal side in the human race. Here are a few remarks made among bees:

At the International Congress of Beekeepers held at Paris in 1900, to which I was a delegate from the United States, a French priest, whose name now slips my memory, made the assertion that the characteristics of temper, or gentleness, in bees, were transmitted through the male. He asserted that a black queen, mated with a drone of the pure Italian race, would transmit to her worker daughters, and of course to her queen daughters, the gentle disposition of the Italian bee. On the other hand, an Italian queen, mated with a drone of the restless and cross common bee, would produce bees and queens who would have the same restless and irritable disposition as the black bees from which her mate was issued.

We all know that hybrids from an Italian queen are cross. After the above meeting, I took pains to investigate the behavior of bees produced by the mating of black queens with pure Italian drones, and I found that the theory worked. It was not difficult, at that time, to find such hybrids, for we had numerous neighbors who had never bought an Italian queen, whose bees were almost pure Italians, through mating with our own Italians.

Since that time, I have been inclined to believe that the cross-tempered "Goldens" may be the result of crosses of pure Italian bees with drones of the irritable Cyprian bees.

It would be interesting to know whether others have made similar remarks, or whether the above experiences were only accidental.

However this may be, the fact remains that, among bees, certainly, "the female of the species is deadlier than the male."

The Oldest Bee Periodicals

Our contemporary bee magazine, L'Apicoltore, of Milan, Italy, in its September number, quotes a statement in our September 1916 number, in which we mention L'Apiculteur of Paris and the American Bee Journal as being the two oldest bee periodicals in the world, also mentioning Gleanings and the British Bee Journal as having been established in 1873. L'Apicoltore reminds us that it was born in 1868. We knew this and mentioned it in October, 1916, and again at the time of L'Apicoltore's golden jubilee, in April, 1917. The mention of Gleanings and the British Bee Journal was not intended to describe them as the next in age to the American Bee Journal. Several bee papers, including L'Apicoltore, were established in different parts of the world between 1861 and 1873. In July, 1917, we mentioned 6 American magazines on bees which were established between those dates. There were also European magazines, especially German and French, but all have closed their careers. So L'Apicoltore may truly claim to be the third oldest bee magazine in existence. Long may it live!

Change in Texas Conditions

Copious rains in the last few weeks have changed conditions materially in Texas. Many beekeepers were looking forward to a dismal prospect of dry weather, honey dearth and much feeding if colonies were to be saved at all.

Now all is changed. Bees have made considerable honey this fall. In nearly all instances they have filled the brood-chamber so that they will have plenty of honey to winter upon, and in many cases considerable increase has been made and a surplus from the fall flowers extracted.

It is yet too early to indicate just what effect this will have on beekeeping in Texas in 1919, but one has but to read the last issue of the progressive "Beekeepers' Item," published and edited by Louis H. Scholl at New Braunfels, Texas, to see that

everyone is elated at the prospect of a return to normal conditions in that great bee state.

Those California Short Course Meetings

Our associate, Mr. Frank C. Pellett, has spent the whole of the month of December in attendance at the California short courses, where he was on the program for a series of lectures on Bee Inspection and Bee Laws.

All reports coming from him are that this series of lectures is the best he has ever attended, both in point of numbers in attendance and in scope of work outlined.

We hope to be able to give more general information in our February and March numbers.

An Italian Acknowledgement of Services Rendered

The following resolution by an Italian Beekeepers' and Silk Growers' Museum organization, sent to Washington, was forwarded to us from the Bureau of Entomology, for publication. It gives another illustration of the present feeling in Allied countries, towards the help received, on the battlefields of France and Italy, from the United States:

The Directing Council of the International Museum of Apiculture and Sericulture in Turin, in its solemn session of October 30, 1918, expresses to the great Wilson and to his collaborators, as well as to all the apiculturists of the United States, its sentiments of high esteem, admiration and recognition of the noble deeds which they have performed in Europe for the cause of justice and the peace of the nations.

Minnesota Inspection

The Minnesota Inspector of Apiaries has published his fourth annual report. It contains a summary of the season's work, a description of foulbrood with cuts, the treatment of both forms of the disease and the Minnesota foulbrood law. It also contains an interesting article from Mr. Carl B. Stravs on the honey exhibit at the State Fair, with recommendations of more extensive exhibits. Beekeepers who expect to thrive in the business should secure this report. Address Chas. D. Blaker, State Apiarist, 4420 Grimes Avenue, Minneapolis.

Hawaian Beekeeping

"The Hive Bee," is the title of a neat pamphlet of 36 pages published by E. C. Smith, Manager of the Garden Island Honey Company, near Honolulu. The pamphlet is well illustrated and contains some interesting information on honey production in the Islands. It reports the annual output of the apiaries of the Islands at about one thousand tons of honey and twenty-five tons of wax from approximately 20,000 colonies. The honey is, for the greater portion, of dark color and of a molasses-like taste. Insects, especially moths, ants and cockroaches, are the greatest hindrances to profitable beekeeping.

English Notes

The "Journal of the Board of Agriculture," published in London, contains, in its October 1918 number, 5 pages devoted to bees—feeding for winter, uniting weak nuclei, making syrup, etc.—all practical hints and advice. But the most interesting part of this interesting journal is, to us, the 58 pages devoted to "Women in Agriculture." Indeed, women have shown their ability, during the strenuous days, not only in beekeeping, but in nearly all pursuits in which men succeed. Although it is true that each sex has a more special sphere of work, we cannot deny that women have demonstrated their ability in many lines where they were formerly considered of little worth. The discernment with which they used the "school vote" in Illinois, some years since, has had a great deal to do with the success of equal rights. Welcome to the women, not behind the men, but at their side, hereafter!

Bees on Shares

The excellent bee magazine, "The Australasian Beekeeper," published at West Maitland, New South Wales, contains in its September number a prize article which we reproduce in this issue. It is very judicious. In truth, "much depends on the apiarist." An efficient man is worth more than half the crop and a neglectful man is of little or no value.

I remember taking care of bees on shares for half of the crop, in my young days, when less than 25 years of age. I had overestimated my ability, in an attempt to care for a number of apiaries many miles apart. It was before the time of automobiles, with bad roads. I came to the apiary in question on a fine June day, when the bees, crowded for room, were swarming strenuously. The owner, a hard-working old farmer, told me plainly that I was not earning my share of the crop. I readily acknowledged my shortcomings, explained the situation and offered to change the conditions of the contract so as to give him entire satisfaction. He was so well pleased with my explanation and my willingness to do the fair thing that he replied immediately:

"Bah! Do the best you can after this and I'll call it square. You're the right kind. You're all right."

The work went on, the bees were supplied with needed supers, the crop was good and we both had cause to be pleased with the results. That old farmer was one of my best friends afterwards, as long as he lived.—C. P. D.

Bee Physiology

We translate the following from the "Apicoltore Moderno," of Turin, Italy, in its May, 1918, number:

"Abbott Collin ascertained that when queenless colonies are deprived of worker larvæ less than 3 days old, they build queen-cells around drone larvæ instead of worker larvæ. This is because, at this age, the worker larvæ no longer receive the milky food which is given during the first 3 days; while the drones, being slower in development, are still fed with it.

"The size of the pollen pellets carried by the workers of a colony, at any time of the year, but especially in spring, is a valuable sign to recognize the condition of the colony. The bees that do not have any brood to feed, or have but little, do not carry heavy loads of either pollen or honey. So a colony whose bees are seen with their pollen baskets heavily loaded with pollen certainly has a vigorous queen."

We all know that a colony whose bees do not carry pollen in spring, or carry very little of it, is likely to be queenless.

Avoyelles Parish Beekeepers' Association

On Saturday, December 7, a number of beekeepers met at Marksville Parish seat and organized a beekeepers' asociation under direction of Mr. E. C. Davis, Bee Extension Agent for Louisiana. J. F. Archdekin was elected President and Mr. L. C. Mayeux, Hamburg, La., Secretary-Treasurer. The purpose of the association is to sell honey and wax and buy supplies for the members.

J. F. ARCHDEKIN,
Big Bend, La.

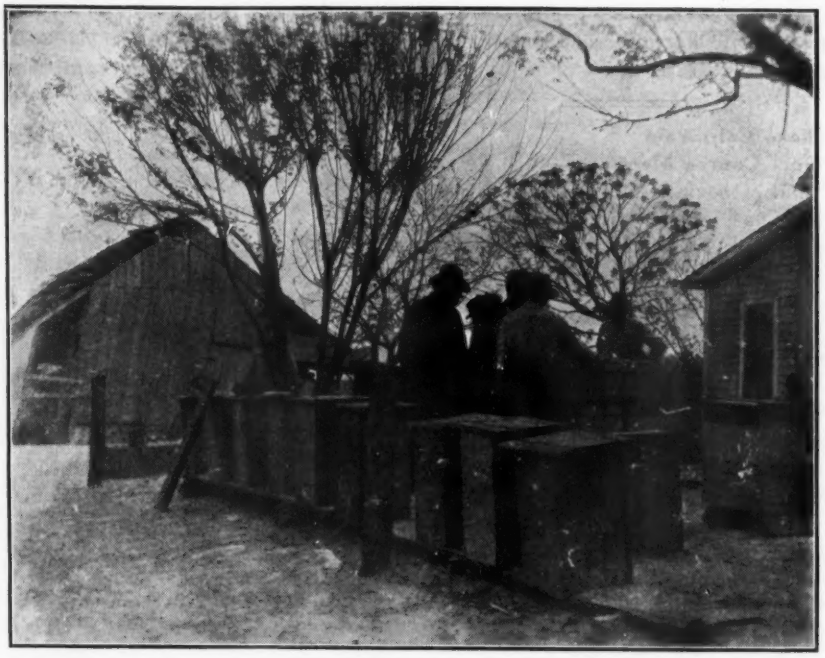
Organization for Disease Control in Texas

TEXAS is a big State in area. It is second only to California in the importance of its beekeeping industry. Accordingly we are not surprised to find the largest organization with centralized control, for dealing with bee diseases, of any State. The work of eradication of bee diseases is placed in charge of the State Entomologist. Since he is also charged with control of insect pests, he places the bee disease problems in the hands of a chief inspector who has no other duties to perform. Under this chief inspector is a force of forty local inspectors who are responsible for the field work.

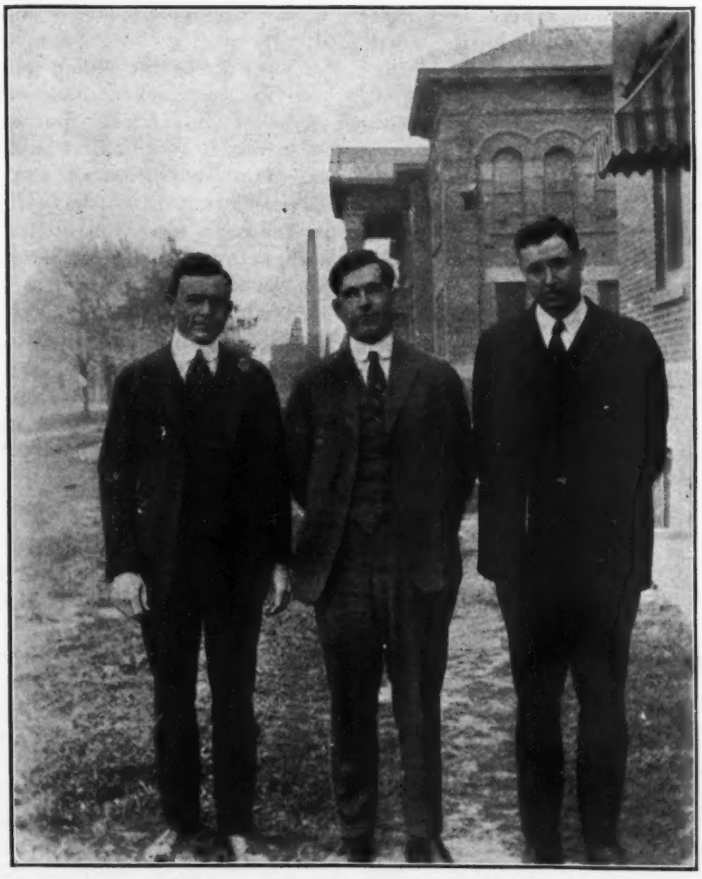
The Texas law is very stringent, giving unlimited authority to the State Entomologist. Not only is he able to enforce all the provisions specifically set out in the statute, but he is also given authority to make such additional regulations as may be needed. On this point the law of Texas reads:

> "Shall have full authority to make, promulgate and enforce such rules, ordinances, orders and regulations, and to do and perform such acts as, in his judgment, may be necessary to control, eradicate or prevent the introduction, spread or dissemination of any and all contagious diseases of honeybees."

The specific statutes relating to control of bee diseases are long, consisting of more than twenty sections of the law. Special provision is made to prohibit the shipping of any bees, equipment or honey into the State, without a certificate from duly constituted authority, to the effect that they are free from disease. Railroad companies are prohibited from receiving for shipment either bees, combs or used equipment from place to place within the State except under such regulations as shall be prescribed by the State Entomologist. The officials are given full authority to examine any bees in transit at any point within the State and to seize and confiscate them if found diseased. Further authority is given to establish quarantine against the shipment of bees or honey into or out of any district which may be designated. This is to prevent the introduction of disease into any territory that may be free from it, or to prevent its spread from localities where it is known to be present.



Transferring the bees is a big job in some sections. The inspectors are responsible for a great advance in Texas beekeeping.



Officials in charge of Texas beekeeping, left to right, W. E. Jackson, chief inspector; S. W. Bilsing, instructor in beekeeping at the college; F. B. Paddock, State Entomologist.

The Entomologist has authority to make it unlawful to keep bees in other than movable-comb hives in any part of the State where he finds it necessary in the discharge of his duties. He may burn bees, hives and honey, if he sees fit, in order to eradicate the disease from any part of Texas.

In meeting any emergency, it is necessary to centralize authority and the Texas people have given the entomologist a great deal of latitude in dealing with bee diseases. Inspection laws have been passed for the benefit of beekeepers, and at their request. What beekeepers want is protection against the spread of disease, and this is the sole object of the law. The results obtained depend upon the manner of administration. Prof. F. B. Paddock, who is responsible for the administration of the Texas law, takes the view that it is useless to spend the State's money in fighting disease in localities where the beekeepers are not interested. He accordingly makes a requirement that the beekeepers be organized in every locality where inspection is undertaken. He regards the co-operation of the local association of prime importance in cleaning up disease. In the selection of a local inspector he

requires that the county organization, in the county where the work is to be done, designate two or more men who will be satisfactory to the local beekeepers. After careful investigation he selects the man who seems best fitted for the work. Since the selection is made from a list of candidates endorsed by the association, there is no reason for complaint because of an unwelcome appointment.

In selecting an inspector several things must be borne in mind. In the first place it must be clear that the candidate is an expert beekeeper who is competent to deal with disease and to give advice on any phase of beekeeping when necessary. Not only this, but it is highly important that the inspector be in position to respond promptly at the proper time. A man may be an expert beekeeper and unsuited to the work because his own business is likely to require his attention at critical times. It often happens that general inspection will not be possible for weeks at a time because of unfavorable conditions, such as robbing for lack of honey in the field, or continued wet weather. Following such a period the man with large apiaries and insufficient help is likely to spend the most suitable days with his own bees.

Again, it is important that the inspector be a good judge of human nature and able to get results without stirring up antagonism on the part of men who need his help. The selection of such a large force of field men as Professor Paddock employs is in itself a very difficult task. The chief inspector goes from county to county, giving assistance and counsel wherever needed and supervising the field work. W. E. Jackson, the present chief inspector, has been called to the army, so that the work has been hampered seriously on this account.

When work is begun in a county the amount of work needed is estimated as nearly as possible in advance and the necessary expenditure authorized. It is thus possible to approximate the yearly expenditure very closely and to keep within the appropriation. The inspectors begin at the center of infection and gradually extend the circle to the limit of infection. They are expected to be very thorough in their work and to examine every comb in every apiary under suspicion. In queen-rearing apiaries, every colony is closely inspected, together with all bees within a mile, before the certificate is issued.

When the size of the State is considered, as well as the great development of beekeeping within its borders, it is difficult to realize the enormity of the undertaking to control bee disease within the borders of Texas. The writer spent nearly seven weeks visiting among the beekeepers of the State, yet was able to visit but a few of the counties. If the chief inspector should travel constantly, he would find it impossible to spend a day in each of the counties and return again the same year. Mr. Paddock and his assistants have a big job on their hands. Success to them.

A New Winter Case

By Chas. Reynders

THE advantages of the winter cases hereunder described, consist in that:

1. They are individual for each colony.
2. Colonies always remain on their stand.
3. There are none of the complications inescapable with cases for more than one colony, as for instance, exact leveling of the ground about the entrances, etc.
4. They are collapsible, so that during the summer they can be laid away, filling up inside of the 5½-inch deep cover, one stacked upon the other.
5. They can be set up for use or dismounted in two or three minutes.
6. They are substantial, light and durable.
7. It takes no more time to make one of these cases than it does to nail up a double-walled hive, as same arrives from the maker, in the flat.
8. While economical, this winter case with a well-made, simple wall hive, is equal to anything that can be bought in the way of double-wall hives.

Fig. 1 is to illustrate a 10-frame dovetailed hive body (a), with chaff tray (b) thereon, and cover on top (c); (ddd) is the bottom-board; (e) entrance-block, and (mm) apertures in latter.

The dotted lines around Fig. 1 are to indicate the 4-panelled winter case. In that same figure (hh) and (ii), indicate cross-section horizontal strips (2x½ in.), holding together the boards whereof the panels are made. (For the latter I now use stuff from high-class shoe boxes ⅜ inch thick), viz.; (hh) strips inside, resting on and along outer edge of bottom-board, as shown by Fig. 4 (kk), and (ii) horizontal strips on side, 5½ inches from upper rim of case (on top of panels); whereupon the cover of the winter case rests. The first of these covers have galvanized sheets; those I now make will have 3-ply asbestos roofing instead, because of too high cost of former. I use the asbestos roofing for the reason of being white.

It should be observed that the vertical dotted lines of Fig. 1 go down lower than bottom, thus underlapping, thereby excluding winds. It must, of course, be understood that the bottom-board rests upon a hive-stand, thus allowing the panels, other than the front one, going down lower than the bottom-board.

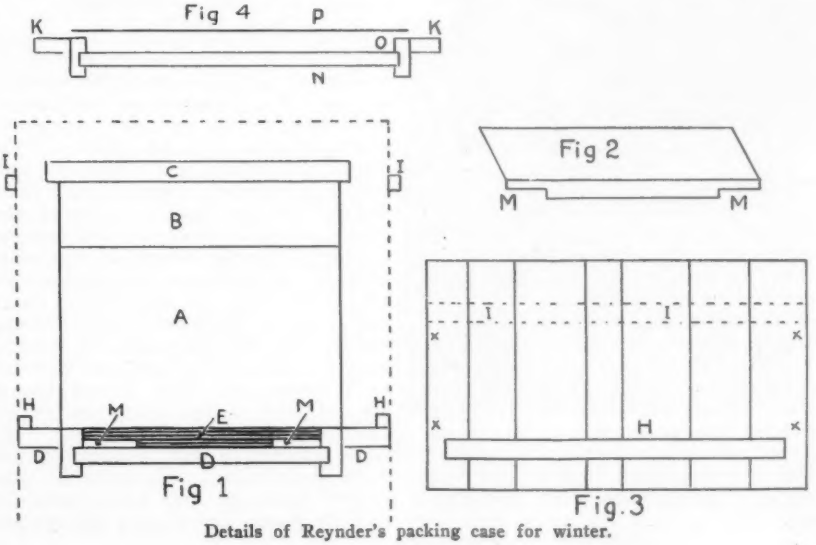
Fig. 2 shows entrance block, 14½x 2⅝ and ⅞ thick—the apertures are at each end, are half the thickness and each 2½ inches long; (mm); see also Fig. 1. Five thin nails are driven through (mm) for the purpose of keeping out mice, etc.. (It is remarkable what little space they can squeeze through, but the grate made by the nails does keep them out).

Fig. 3 shows one panel; (ii) shows the upper horizontal strip in dotted lines; the lower horizontal strip (h) can be seen, the upper one (i), being outside, cannot.

The side and rear panels are like Fig. 3 (the former 24⅞, the latter 20 inches, both 20¼ inches vertically. The front panel has horizontal strips on a level with the others, but instead of underlapping, the lower one rests upon the entrance-block, Fig. 2.

Fig. 4 shows the bottom-board by cross-section; "n" is ⅜ inch and "o" is ⅞ inch. At the rear there is a block like Fig. 2, but solid. Removal of both blocks generally provides amply for ventilation in summer.

The four crosses in Fig. 3 indicate where strap hinges are secured, 8 in all, inside. Half of the hinges, diagonally, are as they are bought, and half modified by filing off the underhead of the pins, so that by either inserting or removing them the panels are put together or taken apart, the latter by pairs. When in spring the winter case is to be removed, it has just to be lifted up from the hive, then in the diagonally opposite corners the pins with the lower head as filed off, need only be driven upwards enough to disengage the four hinges and by the other four hinges (left intact as bought) the four pan-



Details of Reynder's packing case for winter.

els are left in two pairs, collapsed and placed into the cover.

The extreme dimension of the bottom-board is 24½x20, and of the dovetailed hive 20x16¼.

At a certain time I concluded to have uniformity in bottom-boards throughout and adopted this (original) Buckeye board. I use it also with the Lewis Champion Hives, and not having had enough double-walled hives, because of unexpected increase, I used the same bottom-boards with single-walled hives, both dovetailed and home-made. I have never seen any disadvantage from the overlap (in summer) of the bottom-board (at sides and in front) beyond the single-walled hive bodies; in fact, as likely as not, my most productive colonies have happened to be in single-walled hives so adjusted.

I have boards that in summer I use for shade and in winter for windbreaks. In very hot weather removal of both bottom-board blocks seems scarcely sufficient for ventilation required; I then supplement by setting lower (comb) super an inch or so back of top of hive-body, the gap thus provided always fills the bill for ventilation.

Directions for making the winter case:

When used with dovetail 10-frame hive and Buckeye bottom-board, use ⅜-inch stuff and strips for the panels 2x½ inch.

Side panels: Vertically 20¼ inches. Length 24⅞ inches. Outside (upper) side slats, 24⅞ inches and 5½ inches from top. Inside (lower) side slats, 23⅜ inches and 2¼ inches from bottom, ¾ inches off from margin. Hinge blocks (2x4), 2 inches from top and ¾ inches off from margin.

Back panel: Goes inside of side panels; vertically 20¼ inches, width 20 inches. Outside (upper) slat overlaps ¾ at end (2½ inches long). Inside (lower) slat, 20 inches (flush). Hinge blocks, flush and 2 inches from top.

Front panel: Goes inside of side panels, vertically 18 inches, width 26 inches; top rim of same goes even with the other panels. Slats and hinge blocks, same as for back panel.

Cover, out of ⅝ in. stuff, 5½ in. deep, will just be filled up by the panels collapsed. Galvanized sheet or white asbestos roofing.

Ulster, Pa.

BEEKEEPERS BY THE WAY

Dr. J. H. Merrill, Mrs. Merrill and the "kiddies."

Merrill, of Kansas

It requires a peculiar type of man to be a successful teacher of beekeeping. He must be, not only an expert beekeeper, familiar with all the intricate manipulations necessary to make honey production successful under varying conditions, but he must be an enthusiast who is capable of arousing and sustaining the interest of his students.

Dr. J. H. Merrill, of the Kansas Agricultural College, measures up to this standard very nicely. One does not look far in Kansas without seeing some effect of his influence. As State Apiarist he is responsible for the bee inspection in the State, in addition to the teaching and experimental work at the college. The work has not been long under way, but is being developed in co-operation with the State Beekeepers' Association, the Boys' and Girls' Clubs, and other organizations interested in bees, thus reaching the greatest possible numbers of people.

Our picture shows Doctor and Mrs. Merrill at home with their two children.

Fifty Years Ago

Elisha Gallup in the American Bee Journal for January, 1869

AS I have a great many enquiries in regard to wintering bees, I propose to give my answer through the Bee Journal.

M. Quinby recommends a barn cellar and he gives a description of his in his book. But we do not all have such cellars. Mr. Robert Jones describes a very cheap house to winter bees in. I think that 10 or 12 inches of sawdust would be better than six for our northern climate. Mr. Thomas, of Canada, gives us another cheap plan. Mr. Wedge, of Wisconsin, uses a house with double board walls and a foot space between each, filled with straw dust, with perfect satisfaction. Chas. Dadant gives us his method of burying bees, and with his method of ventilating the trench there is no doubt but it will work well. If you put one tube in the top, or two of the same length, it is no ventilation at all. But put one in and let it come up through the covering of the roof and extend down to within an inch or two of the bottom of the cave, then put in another, letting it go down just through the covering and extend 5 or 6 feet above the covering and you have the very best of ventilation, with a strong curent of air.

A strong, large swarm, with abundance of honey and properly ventilated, will winter well on its summer stand; but it is almost impossible to give written instructions to new beginners that will winter every swarm, without as much trouble as it will cost to fix some of the repositories above mentioned. Our winters are so variable that the method that will work well in one winter would not answer the next, on the summer stand. With an especial repository, we have the winter under our control, and wintering reduced to an absolute certainty, with proper ventilation. A large number of swarms create a large amount of animal heat, and a small number create heat in proportion. So in ventilating we must take this into consideration and govern ourselves accordingly.

About wire gauze. If you fasten your bees in with fine gauze and one bee takes a notion that she wants to go out, she commences butting her head against the wire, and very soon communicates her agitation to others of the swarm, and they lose some of their number every time. Now, instead of the gauze, ventilate each hive just right, and you will not lose a dozen bees per swarm in the whole winter. If you are troubled or are afraid of rats or mice, use coarse wire that a bee can pass through easily, and still keep out the mice. I winter in the cellar, and yet ventilate each swarm so that I can go all around with a light and not a bee stirs or attempts to come out. If a large swarm is not peaceable, give more ventilation. If from a small swarm some of the bees come out and discharge every time you go into

the cellar, the inference is that there is too much ventilation.

Osage, Iowa.

Beginning in Extracted Honey Production

By Oscar Ritland

IF we are going to make the production of "Extracted Honey" our life work it is of the greatest importance to start right. For if we do not start right we cannot expect to succeed later on.

In this paper I will give some of the things which I think are important to anyone who is going to start in the production of "Extracted Honey."

First, I would provide myself with several of the leading textbooks on beekeeping and study them over and over again, and I would also subscribe for one or two of the bee journals. These ought to be preserved for future reference. I have every issue of the bee journals since I began taking them, and I refer to them constantly. New problems are continually coming up and in the back issues of the journals I can find a solution to most of them.

During the winter there is very little to do with the bees. Then is the time to make everything ready for the coming year. If any hives are to be made or bought, winter is the time to attend to that. Frames should be filled with foundation and everything gotten in readiness, for when summer comes we are usually busy, and what a satisfaction it is to have everything ready.

Finally spring draws nearer and we long for the time when we can work with the bees on the summer stands. If they are quiet in the cellar I think there need be no hurry about removing them. I would suggest about April 1 to 10 for central Wisconsin, depending upon the season. I like to have my bees out a few days before soft maples bloom. The queens usually begin laying about the time of removal from the cellar and there will be some brood when the first pollen comes.

From now on we want to do everything in our power to make the colonies prosper, so as to have them strong early. Every colony should be examined shortly after being placed on the summer stands. If any are found to be queenless the simplest way to dispose of them is to unite them with weaker colonies, having a queen. Any colonies found short of stores may be fed by giving a comb of honey saved from the previous fall for this purpose.

If the apiary is in a well protected location and the hives are well made, so there are no gaps at the corners, and the covers fit snugly, I doubt if it would pay to cover the hives with paper. But if it is in a windy place, or the hives are gaping at the corners, I think I would paper every time.

I do not fear a cold spell coming shortly after the bees are removed from the cellar as then there is only little brood in proportion to the mature bees. But after two or three weeks of nice weather the brood will have increased considerably while the mature bees will have decreased; then should a cold spell come, some of the brood is liable to chill. This is when the paper pays, and pays big, for we do not want the bees to have any setback at this time. If we cannot get them strong and overflowing with bees before the clover flow is well advanced we will lose part of the surplus.

All queens' wings are clipped before the colonies become too populous, and as I keep a record of every colony, I make a note of it in the book. I also keep a record of the number of frames of brood each colony has at each examination, which enables me to tell which colonies can spare brood in case I want to help a weak colony. I find there is quite a difference in the strength of the various colonies in the spring. Some have only three frames of brood, while others have seven or eight frames. In order that all colonies may be ready for the same treatment, at the same time, I draw nearly mature brood from the stronger and give to the weaker ones until all are prosperous.

As soon as a colony becomes strong enough so that it fills one story with bees, brood, pollen and honey, a second story should be given without excluder. If there is any doubt as to whether a colony actually needs another story, I would put it below the original brood chamber, for there it can do no harm, and as the bees need room they move down.

Royal palms near "Cubanacan," Indian name of the place where is located now the city of Santa Clara, Cuba. "Cubanacan" means heart or center of Cuba, and the Indians were right, as our city is in the middle of the island. Urbans Trista.

Any combs containing drone comb should be placed by themselves and used only over an excluder as storage room, in order that the bees need not waste time and energy in raising drones.

I prevent swarming by the well-known plan of placing the brood above the excluder and letting the queen fill the lower chamber anew. I leave one comb, containing the least brood, below, and the queen keeps right on laying.

It is rarely necessary to place the brood above again. After the brood has been above the excluder for ten days it will all be sealed and will be fine for making increase. Here is something I have learned about making increase. It pays to make only a moderate amount and to make it early and strong. I think there should be a laying queen in every new colony from July 10 on, unless the colony is made proportionately stronger. For if a colony does not become strong by fall it will be weak in the spring and will not be ready for the clover harvest. Far better, then, to make only a moderate increase and make it strong.

If we have everything ready in the line of extra hive bodies, etc., we can simply add extra stories as the bees need room. I want enough hive bodies ready at the beginning of the season to hold the largest possible crop, for I don't extract until the whole crop is ready.

When we extract we must have everything arranged conveniently and the most uptodate tools to work with. There is a great deal of satisfaction in having everything go smoothly. I have used the steam uncapping knife two seasons and am well pleased with it. The secret of success seems to be to have plenty of steam so that the jet does not die down every time one gets into a comb.

I have also used the new friction drive power extractor two seasons with great satisfaction. It certainly sends the honey out of the combs. All of my combs are wired, so they can whirl at great speed without injury. A small gasoline engine furnishes the power. The same engine runs the saw in the winter and the cream separator and churn between times.

This past season I built a honey-house and workshop. It is 16x26, two stories high, with bee cellar under it. The upper story is used for storing supplies and the first floor for extracting honey, making hives, etc.

As the years go by, the stock of extracting combs grows larger and the crops of honey will be larger as a result, and swarming will be more easily controlled. The extracting combs are valuable and should be cared for.

We ought also to try to improve our bees each year by requeening with queens of better stock. If our

own bees do not satisfy us, we can send away for better queens. I have had bees all the way from blacks to the yellowest Italians, and am satisfied that the Italians are the bees for me. The only thing in which the blacks excel is in making more beautiful cappings to the honey, but that matters little to us who produce extracted honey

Let all who produce extracted honey make it their aim to have all colonies strong and overflowing with bees at the beginning of the clover harvest and the years of total failure will be fewer.

Elroy, Wis.

Carpet Grass

By C. D. Stuart

AN excellent pasturage for both live stock and honeybees is the carpet grass of our California river bottoms. Luther Burbank describes this plant as *Lippia Repens* to distinguish it from *Lippia Canescens* of European botanists. It is indigenous to Chili, and became first established in California as a lawn grass.

Out of some ten thousand plants grown, Burbank propagated two that he named Dixie and Mojave. Dixie makes a deep green lawn of good texture, and requires but one-tenth the moisture it takes to keep a bluegrass lawn healthy. Mojave grows a lighter green, but is valuable along canals and other water courses, since it throws out long roots that hold the banks from washing. Both varieties spread by rooting, like strawberry vines, and once introduced to a favorable locality, they quickly overrun the other grasses.

Lippia Repens, lawn plant in California much sought after by the bees.

Lippia is a distinct relative of fragrant verbena, but different in physical habit. It is not hardy, and one objection as a lawn grass is that it turns muddy-brown as soon as frost strikes it. This unpleasant hue it retains all winter, and does not recover a lively green again until about the first of June. But where it roots on overflowed lands, it starts growth as soon as any of the other grasses, because, until the soil is drained of surplus water, no plant can thrive.

Lippia bears a small white flower, its nectar-sack easily penetrated by honeybees. The flow of nectar is abundant and steady, a yield of two cases to the colony not being extraordinary. The honey is light amber, heavy bodied, and about of the same quality as alfalfa, which it is usually taken for. It candies in about the same time after extracting that alfalfa honey candies. Two bottlers to whom I introduced it last year said they preferred the flavor of lippia to alfalfa, but they could not be induced to pay more for it.

The lippia flower attracts bees from far and near. In Chico, many lawns have been dug up because children playing on them in hot weather were invariably stung on their bare feet. The herbage is likewise attractive to live stock, whose bare feet are not so easily tickled by bee stings. Its fine leaves keep green and growing, independent of rainfall, and constant cropping serves to prune the runners and make the plants stool; while tramping makes them a solid mat. Burbank found that to run a wagon over the pasturage caused the plants not only to thicken, but to spread more rapidly than any other grass subject to a similar pressure. The accompanying photograph gives an excellent idea of the trailing habit of this grass, and of its blossoming.

In order to take advantage of carpet-grass pastures for honey producing, hives must be placed on trestles. The apiary from which the accompanying photograph was taken belongs to Winfield Gear, on the Sacramento river. The trestle is about 7 feet high, and in years of extreme inundation, water reaches within two feet of its floor. The floor accommodates about one hundred colonies, although at the time of taking the photograph there were less than fifty. These trestles are not expensive, and, when well built, last a lifetime—barring sycamore trees. Bees, when wintered on such elevations, are saved from mice, toads, skunks, and all like pests that disturb an apiarist's slumbers on stormy nights.

A sycamore fell during a storm and broke the trestle on which the apiary is kept above the river floods. Photograph by Winfield Gear.

The photograph also shows some of the adverse conditions a river-bottom apiarist must expect to contend against. A neighboring sycamore tree nearly one hundred feet high fell during a storm last winter Mr. Gear was more interested, however, in the condition of the hive shown upside down than in the destruction of his handiwork. In this reversed hive the bees had started brood rearing weeks ahead of the other colonies, due probably to the breaking of combs and the spilling of their stores. The colony appeared but little incommoded by the topsy-turvy condition of their domicile.

Los Gatos, Calif.

Increase With Pound Packages

By John Vanden Berg

AFTER a number of years of beekeeping, the fall of 1914 found me with only five colonies of bees.

During the winter we nailed up a quantity of supplies, including 1,200 standard Langstroth frames, fitted with full sheets of light brood foundation, which was fastened in place with Dr. Miller splints. Wishing to make a good job we used eight splints that were boiled in beeswax to each frame.

Being anxious to increase the number of colonies as rapidly as possible, I bought up colonies of healthy bees wherever I could locate them, some being shipped in from another

State. Early in May I noticed the adult bees from one of the five colonies we wintered acting in a strange manner. From the symptoms I concluded it was a case of paralysis. They were treated in several ways without success; all other colonies were healthy.

We were now eagerly waiting for the pound packages of bees with queens which had been contracted for, and yet being short of empty combs and frames of honey, we were glad that they did not arrive, for at the time the weather was unfavorable, raining most every day. When they did come it was still raining. Taking them into the kitchen, I applied heavy syrup to the sides of the cages. After the bees had all the feed they could take they were put in a warm place until the next day, when we hoped for clear weather. I made ready ten hives at home, where the five colonies were, one of them having paralysis, there being at this time a large number of dead bees on the ground in front of the entrance of the affected colony. I opened this colony, found and killed the queen, then placed one frame of brood and bees from this colony in each of the prepared hives. A comb having little or no brood was given an extra supply of bees. A frame of foundation was placed each side of these combs. The cases were then opened and the bees shaken onto the bottom board and gently urged onto the comb of brood. When most of them had gone there the cage was placed on the bottom board to allow the remaining bees in it to join those on the comb. In one instance the greater part of the bees returned to the package. Later, before moving these hives to an outyard, they were given another frame of brood.

As the season advanced I failed to note any evil results due to giving these packages of bees combs of brood and bees from the colony having paralysis. Very likely a good warm feed and the introduction of a number of healthy young bees and a new queen would have helped matters in the diseased colony. Since there has not been any of this disease present lately, have not had the opportunity to try out the plan.

Other packages of bees were taken to the outyards as soon as received. They were given frames of brood, but no bees, since by now I was keeping the strong colonies busy drawing out foundation into combs for increase. Our main flow comes after August 15. We have no flow from clover here. After fruit bloom and locust blossoms are gone there usually is a little honey coming in from tulip trees during June. What honey we get at this time is very dark, but there is a good local demand for it. If this so-called "Black Strap Bug Juice" could be produced by the ton, New Jersey would become famous in the beekeeping world, I'm sure. At least I would be content to remain where at present located.

After tulip bloom there is a period of several days during which there is no surplus honey coming in. Early in July we sometimes enjoy a heavy flow from sumac, which usually lasts long enough to fill the brood chamber and complete the unfinished sections in the super. I now know it is a mistake to try to produce section honey here.

During this time we started some 3-frame nuclei, purchasing queens to head them. When sumac had gone there was no nectar coming in and none was expected until about August 15. In buying our supply of queens we purchased half dozen and dozen lots from different sources in order to try out many advertised strains. They certainly were full of energy. These bees did not waste time gluing up the hive fixtures, for, owing to a former experience, the bees were on staple-spaced frames; but, judging from the way they treated the frames of foundation and partly drawn combs they must have worked day and night trying to tear out the wooden splints; as a result, all the foundation and partly drawn combs that were in the hives were reduced to ribbons. I then gave the bees wired frames of foundation. I found that excellent combs could be gotten by placing these frames of foundation supported by splints into the brood chamber of strong colonies, one or two at a time, when the bees were gathering honey. When promptly drawn out, these combs are attached to the frames at all points, excepting perhaps a small space in the lower corners. The combs are practically perfect, brood being reared up close to the top bar, due to the absence of any sag in the foundation. If I were located where there was a good spring or summer flow I would try them again, but not as many as 1,200.

The 15th of August arrived, and I had bees in 80 hives, and soon after I realized that I would not have that many colonies, worthy the name, ready for the fall flow. I promptly killed a number of undesirable queens and when the work of uniting had been finished I had 60 colonies. They all gathered sufficient stores for winter, a few gave 25 to 30 pounds of extracted honey from aster. We prepared them for winter by wrapping in tar paper. The entrances were contracted down to ¼x 6 inches.

Wanawah, N. J.

Care of Virgin Queens

By C. C. Miller

A CORRESPONDENT writes: "Could you not give some advice in the American Bee Journal as to how virgins should be handled from the hatching-cage to egg-laying? This period is the sticker. Everybody tells how to rear them, which is easy; but to get them accepted, mated and laying is, indeed, another game."

There is probably no one, however experienced, who can count each year on having successful layers out of 100 per cent of the young queens which emerge from their cells, and nothing can be said here in the way of teaching that would warrant any such expectation.

If a sealed cell be given to a nucleus which is queenless, and fully conscious of its queenlessness, which is as much as to say that it has been queenless 24 hours or more, there should be little doubt as to kindly acceptance. But if a virgin be given from a hatching-cage, as our correspondent mentions, the case may be different. If a virgin be taken just as soon as she emerges from her cell, supposing that she has not been imprisoned by the bees some time after she is ready to emerge, nothing is more sure of acceptance. But if she be left in the cage until a week old, her chances of life are slim, no matter where introduced. While very young, supposing she is mature enough to emerge from the cell without being picked out, the bees seem indifferent to her, not considering her in the light of a queen, but as an innocent young thing that is utterly harmless, and she will be tolerated even in a colony having a good laying queen with which the bees are perfectly satisfied. But when she becomes old enough, and begins to put on airs as one of royal blood, then she is considered in quite a different light. If it be in a colony with a laying queen, even though she has been kindly treated in her babyhood, just as soon as she begins to put on

C. B. Palmer's apiary in summer. Sweet clover helped make a big yield.

airs as a young lady of royal birth, there seems to be fear for the safety of the reigning sovereign, and the intruder is assassinated.

In a queenless nucleus, one would think that a virgin of any age would be kindly received, yet if she be past a certain age the bees seem to think there is something not satisfactory about her, and she is very likely to be voted out. So if a virgin be given from a cage or a nursery, care should be taken that she be not over the age prescribed in the laws of the bee commonwealth. Just what that age is, perhaps no one knows yet, but it may be well to advise that to be on the safe side a virgin should not be left in a nursery until she is more than 24 hours old. Of course, it is convenient in many cases to leave her unused until a week old or more, but one runs risks in so doing.

The age of the bees in a nucleus is a matter of importance. In general it is the older bees that are grouchy about accepting a queen, whether the queen be laying or virgin. So it is better to have a force of **young** bees in a nucleus. This matter will be likely to take care of itself when a nucleus is first formed, for the older bees are likely to return to their old place. An extra allowance of bees should be given to make sure the nucleus will not be too depleted by the return of these older bees. If the nucleus is to be used for the fertilization of more than one young queen, keeping it stocked with sealed brood will provide for a continuous supply of young bees.

Perhaps the most ticklish time for the young queen is when she makes her nuptial flight. What with birds and insect enemies, many a virgin makes her flight, never to return. Worst of all is bad weather, with its usually attendant lack of nectar in the fields. One may atone to some extent for the lack of incoming nectar by daily feeding, although it is doubtful if any feeding can entirely take the place of a natural flow. But against the baneful effect of bad weather there is no remedy. The most experienced veteran is just as helpless against it as the novice. All that can be done is to grin and bear it, hoping for better luck next time.

The man who rears queens merely for his own use will time it so as to rear them mostly, or entirely, during a good flow, when weather is likely to be favorable, rearing a superfluity of virgins, so that if a goodly portion be lost he will still have enough successes to meet all his needs.

(Dr. Miller refers the above to the editor with the request to add to it if advisable, as he feels "none too competent." It may be as well to say that this matter of virgin introduction has always proven a difficult matter for us, and we much prefer the introduction of ripe queen-cells. We will be glad to hear from men who have been regularly successful in the introduction of hundreds of virgin queens. They are certainly not very numerous.—Editor.)

What Do You Consider the Most Equitable Arrangement for Working Bees on Shares?

By L. B. Lundie

I HAVE had a little experience with working bees on shares. Some years ago, in addition to my own work, I managed an apiary of about 60 hives for the honey and wax. The owner was a thorough gentleman. He never interfered with me at all for the whole season and was quite prepared to take my word for what honey and wax was gathered for the whole season. However, I only managed the bees for that one season, as I did not consider it paid.

I also had another experience three years ago in working bees on shares for half the honey and wax. An old employee of mine was leaving for the front and was much concerned about the seven hives he was leaving behind. In a weak moment, or in a burst of patriotism, I told him not to worry about his bees, as I would do my best to look after them during his absence. One season, though, was quite enough for me looking after those seven hives. They all wanted to swarm, and the little apiary was easily doubled, making 14 hives in all. I apologized to the boys' parents and regretted that I was unable to look after them further. The coming season is the fourth since he went away, and, with proper management, there should have been upwards of 50 hives to have started the season with.

In each case, Mr. Editor, I was dissatisfied to continue, as I considered half the honey and wax was not sufficient. Of course, in letting bees out on shares much would depend on the apiarist. To an incompetent man or a stranger, or one who has had little experience, a half share might be ample, and, perhaps, if he should neglect his work in any way, too liberal payment. But I am of the opinion if a man is found to be thoroughly honest and also has a thorough knowledge of his work, and, withal, is not afraid to work, he should be entitled to more than half the honey and wax. Especially if there is no need for the owner to visit the apiary from one year's end to the other.

I fail to see why bee farmers should be treated differently and get a smaller share than wheat farming on the share system. Before the war there was much of this done in this locality. The worker doing all the labor, such as plowing, harrowing, etc., and finding two-thirds of the seed and manure, and receiving for his reward two-thirds of the crop. The owner of the land contributing one-third of the seed and manure, and being quite content with a third of the harvest. Many may probably say that the conditions are so totally different. In some respects I agree with them. But in working bees on the share system the owner should not close his eyes to two outstanding features. (1) Nature, providing you are near a State forest, gives you the nectar free, gratis and for nothing; and (2) as I have previously mentioned, so much depends on the personal touch and the honesty of the beekeeper.

Before closing, another point is really worth mentioning. At the present time the majority of us, to a greater or less degree, are thinking of investing in the seventh War Loan, and will receive 5 per cent for money invested. I estimate the value of 100 hives with plant and accessories at say £200. If the country is any good at all, it should average, year in and year out, at least two tins to the hive, and with the ruling high price of honey, after paying for tins and cost of range area the net proceeds of the apiary should amount to £200 (on an average) every year. The owner receiving one-third share should get £66 13s 6d, and the beekeeper, doing all the labor, gets the balance, £133 6s 8d. Allowing 10 per cent off for depreciation, say £20, leaving £46 13s 4d net profit, which is over 20 per cent on the capital invested. Providing the right man is

Honey house and apiary of C. B. Palmer, at Bradshaw, Neb. Nebraska is to have a meeting of beekeepers in January.

looking after the bees, a gilt-edged security, is it not?

I might add, unless otherwise arranged, the swarms and increase should be retained by the owner.

From Australasian Beekeeper.

Montana Sweet Clover and Cherries

If you are coming to the Glacier National Park next summer, be sure to come in July, when those big black, sweet cherries are ripe. This is not a good picture, for it does not show the trunk. We are 31 miles from the Glacier National Park.

With the yellow sweet clover they are planting, this will soon be a fine honey country and the honey is fine. I use a large hive. I want lots of room in the lower story. We never take any honey from the lower story, but I have many times taken off as much as 200 pounds of honey.

J. D. KAUFMAN, Kalispell, Mont.
Cloverdale Stock Farm.

An Unusual Season

By G. C. Greiner

THE past season has been, in many respects, an unusual one. Almost every season presents some extremes in one direction or another, but it does not often happen that so many extremes follow one another the same season; it can be justly termed "a season of extremes."

When spring opened many beekeepers found themselves destitute of their bees. According to different localities, severe climatic conditions, the ravages of disease, etc., their losses ran anywhere from 10 to 80 and 90 per cent. A few reported hardly any winter losses, while others had lost nearly or quite all they had. The writer was one of the latter class, having been visited by American foulbrood in its most destructive form. To make up the deficiency by buying from neighboring bee-owners was out of the question. Only in exceptional cases could bees be bought, and then only in limited number, as an accommodation. All felt eager to keep what bees they had and comply with Mr. Wilson's war-time recommendations to produce as much foodstuff as possible for the boys "over there." Even the combless package establishments could not better the situation to any great extent; they all reported being overrun with orders, more than they could fill for a long time to come.

Mr. J. D. Kaufman, Kalispell, Montana, eating sweet cherries in the tree. He lives less than 60 miles from the north line of the United States.

Then the season's honeyflows presented some peculiar features. The first sources of nectar, among which the dandelion played an important part, was exceptionally helpful to the building up of our bees. I have never known a season in which medium and even weak swarms made such rapid progress. Although the white clover yielded abundantly, on account of unfavorable atmospheric conditions, the first half of the flow was entirely lost to the comb-honey producing colonies; they did not enter their sections until the best part of the flow had passed. Fortunately, the main part of our bees were run for extracted honey, which enabled them to store surplus at open spells, when the comb-honey colonies could not build comb or even draw out foundation.

In spite of the discouraging beginning, the season turned out to be one of the best in many years, the most bountiful surplus crop was secured. From the time the first honey from early fruit trees was gathered, honey never ceased to be coming in until bees were confined to their hives by cold weather in October. During all my extracting early and late honey, I could leave the doors of my honey-house wide open and not a bee offered to molest me. Favored by this unusual honey-flow, I have taken approximately 280 pounds of surplus honey per colony, spring count; of this about one-third was comb honey.

Then came another extreme in the shape of unheard-of prices for our product. For many years I have sold the very finest of water-white clover honey for 40 cents per quart and a little later for 45 cents. Then came the beginning of war prices, a year ago last summer, with 65 cents per quart. This caused some of our close figuring customers to drop honey from their daily diet and it seemed at that time as though this higher price would have a detrimental effect on the sales of honey. But this was only temporary; it could not reasonably be expected that the price of honey would remain on a level with pre-war prices, when all other commodities had taken a steady upward course, reaching, in many instances, double and treble their former prices.

But the war continued, and to supply the hundreds of thousands of our boys at the front, as well as needy foreign nations with food, a general saving of all provisions was ordered by the President. The sale of sugar was especially restricted, so that the people were compelled to fall back on honey as a substitute for sweetening. This gave the price of honey another advance in all markets; the last year's 65 cents was raised to $1.00 a quart, with smaller packages still higher in proportion. Although beekeepers, as a class, are generally law-abiding citizens and regretted these deplorable war-time conditions, yet, unintentionally they were benefited by the increase expenses imposed upon others. In many instances they more than made up their previous winter losses by these high prices of honey.

The last extreme which I wish to mention in this article is the product in honey and increase of my best yielder. Ordinarily my average yield mentioned above would pass as an extreme, but this colony has more than doubled it. To make everything as plain as possible, I can do no better than give a condensed outline of the main features connected with this case.

When I purchased this colony, early this spring, they were, in regard to brood and bees hardly above medium strength, but their brood was, to all appearances, perfectly healthy, which under the prevailing circumstances, I prized higher than a hive crowded with bees. It was somewhat of a disappointment to me that they had all indications of being genuine hybrids, which they proved later by their stinging inclination.

As the season advanced and new honey made its appearance they built up at an astonishing rate, so that by May 10 their hive was crowded with brood and bees. According to my practiced rules and regulations, I divided them on that day by leaving the queen with two combs of brood and all adhering bees in the old stand and moving the remainder, after introducing a young southern-bred queen to a new one some distance away.

Making this division seemed to inspire the old queen with new energy in building up her reduced home, and by June 2 the hive was again full of brood and bees. Being anxious to make all the increase consistently, not cutting off the honey crop entirely, I divided them a second time exactly as the first time, except that

One stock of yellow sweet clover grown in northern Montana. Note the woman behind it. In America the prudent farmer has and will leave to posterity, a fertile farm.—J. D. Kaufman.

this second division was run for extracted, while the first was used for comb honey.

On July 12 something unexpected and unusual happened. The first division, after they had finished two supers of twenty-four 1-pound sections each and were nicely at work in their third, cast a medium-sized normal swarm. I generally return such to their old home or hive them on the old stand, but being still anxious for increase, I hived them separately on six empty combs, and a few days later gave them an extracting super reduced like the hive by chaff division-boards to five combs.

Now for the result.. I did not actually weigh the honey from any of these swarms separately, but I have time and again weighed supers before and after extracting. I can, therefore, vouch for the approximate corectness of my estimates. From the original queen, hybrid as she was, I have extracted approximately 225 pounds; the first division has given me 120 sections, the second division 210 pounds, and the young swarm 55 pounds, making a total of 610 pounds from one colony, spring count. This breaks all records of my beekeeping life.

The secret of my heavy yields, expressed in a nutshell, is simply this: Brood-chambers should never be disturbed during a honey flow. I never open a hive from the time spring management is completed until the following spring unless it is strictly necessary.

La Salle, N. Y.

The Tools of a Worker Bee

By D. M. Macdonald

IT was my pleasure and privilege lately to visit a pneumatic tool factory, large engineering works, and also a part of a ship-building yard. The tools being manufactured and the tools being used were marvels of perfection and admirably fitted as means to an end. Yet both in finish and application they were left far behind by the exquisite tools possessed by the worker bee, as seen with the aid of the microscope; and I should like, if I could induce our budding beekeepers to give of their spare time to study the marvelous pieces of perfection included in a bee's outfit.

Pollen Baskets. These are models, and every part is exactly suited for the purpose for which it was created. First, we have a hollow space near the joint of the posterior leg, and facing this are a great number of bristly hairs to save the cargo from falling out of the baskets. On her fore legs are brushes with which she dusts the feathery hairs on her abdomen, pressing the pollen grains with which they are coated, backwards into the baskets, where the mass is pressed down in a solid load. The in-curved hairs keep this in position while she is winging her way to the hive. Her burden is unloaded with the assistance of her other legs and the pollen deposited in the cells ready to supply beebread for the nurse bees to feed the larvæ. Every tool aids the good work, for it takes several to load up and several to unload the comparatively huge burden

Antennae. These feelers are organs of touch and bear 12,000 tactile hairs. They are also supposed to be organs of smell, and in the case of the drone, contains 37,800 smell hollows. (This has recently been disputed.) Besides, many claim that they are the seat of some unknown sense or senses, whereby the worker bees fathom and measure the darkness of the hive interior. As organs of touch note how the guards employ them to spy strangers. With bees of the same hive they are used to caress and fondle. Touching the queen they display affection and adoration. In her absence they employ them to discover what is wrong, and by a mutual contact of the antennae they discuss how to right the wrong by providing a new mother.

In the process of comb building what an infinity of shapes the antennae assume, and to what a multitude of uses they are put. They are the true architect's and builder's main stay. They are the tape, ruler, plumb-line, compass, square and cube, all rolled into one, which jointly and severally enable the workers to construct that wonder of perfection, the hexagonal cell. Here is a marvel: deprived of the antennae the worker ceases to take any delight in labor of any kind.

Such a delicate and important tool requires to be kept clean and fresh, and here, fitted for the occasion, we find a specially provided appliance suited for the purpose:

The Curry-comb. The bees' anterior lower legs are found to perform duties so analogous to what are carried out by our hands that they are called palmae. They "wash" the bee's face, but their chief use is to clean up the antennae. An open space between two joints of this leg just permits these being drawn through, with a slight pressure applied by the sinews, and the curry-comb, consisting of a number of hairs, cleans and polishes this important organ. The process can be often observed and the action of the pecten is very interesting.

The Feet of the bee are fitted with two tools well worthy of study; the claws and the pulvillus, pad or cushion. The claws aid the bees in walking over a rough and uneven surface. By digging these into the hollows of depressions, they are enabled to make progress with comfort and freedom. When, however, the surface is smooth as glass the pad comes into play, the claws are pushed back and the cushion exposed, thus preventing the insect from slipping, as one would do on smooth ice, because the pulvillus is provided with a kind of gum which this apparatus can exude at the will of the insect. When walking on the inner ceiling or similar parts of the hive this appliance enables the bee to walk upside down with equal facility as she walks or runs in her ordinary position. The claws act as a set of hooks when bees are clustering, while out as a swarm. Those below hook onto those above. The same ingenious contrivance permits the bees to hang in festoons when comb building, and thereby provide the workers with a set of ladders, bridges and roadways along which they move with dexterity and facility.

The Tongue. The honeybee is provided with a wonderfully complete tongue, made up of many parts, but it is difficult to explain briefly how all the tools are made to work together at the will of the worker bee when collecting nectar. Let it suffice at present that she can, by manipulating these parts, gather either the tiniest sip or a copious flow at will. The muscles force this liquid into the honey sac, where it undergoes a purifying process before being regurgitated into the cells. By a powerful set of muscles it is forced out of the sac, but in the act it is strained. The strainer consists of a set of hairs pointing backward and inter-crossing, which hinder the pollen grains from finding their way out into the honey-cells. There are quite a number of tools employed in providing us with pure honey. Amongst others not yet named is a gland in the mouth which aids in making nursing food for the young bees, and royal jelly for the young queens.

Bees are provided with a species of laboratory wherein they convert the liquid honey, which they pass into a "tank," and out of this they manufacture those sheets of wax which we find at times in the wax pockets. Parts of their feet, their claws, as well as their mandibles, are used as tools for passing on these sheets to the mouth, for masticating and making them pliable and malleable for biting them into shape, and for building them into the waxen cells. They are also used for capping brood and honey-cells, and the mandibles are used by workers, drones and queens in biting their way out of their natal cradles.

The Sting of the bee is a tool frequently felt as well as seen. It is her sword or bayonet, her scimiter, a lance, her weapon of offense and defense, wherewith she gallantly defends her hearth and home, frequently to the sacrifice of her own life.

Bees have frequently to force their way into the corolla of a flower when hunting for both pollen and nectar. In the same way their multifarious duties in the hive demand that they enter the confined space of a worker-cell. Therefore they are fitted with four small wings, capable of being folded into small dimensions. To increase their powers of flight they are provided with a set of hooks whereby they can fix each pair of wings into one large one, thus greatly magnifying not only their powers of flight but adding to their carrying abilities.

Seen through the microscope, these various tools are wonders of perfection, and I earnestly advise all beekeepers to make a careful study of their mechanism and functions.

Banff, Scotland.

Painting the Queens to Recognize Them

So many have asked me questions concerning my way of marking the queens that I will give you my method of proceeding.

The coloring may be prepared of several tints, but yellow is the most useful, as it is more readily seen and helps in finding the queen. I buy in a paint shop a few cents' worth of chrome yellow. I soak it with a little alcohol to make a thick paste, which I then dilute with sulphuric ether until it becomes liquid. It is then ready to be employed, but must be kept meanwhile in a well closed vial.

To hold the queen during the operation I use a ring made of pasteboard with a few threads run back and forth through it in all directions about an eighth of an inch apart, like a net. Some apiarists prefer to hold the queen by the thorax or drop the paint on her while she is freely walking about. But there is more or less danger of spotting her on the wrong place, on the head or the wings. I prefer the net.

I place the net over the queen on a piece of comb and press down lightly so as to hold her down, then with a simple blade of grass I drop a small particle of color on her back. She must not be allowed to stir under the net as the color might spread. I prefer to release her at once. In a few seconds the color is dry and the queen remains marked for her entire life. It is important that the paint be of the right consistency, neither too thin nor too thick. In the first case it might spread and soil her. In the second it would not remain fast to the thorax. A beginner might experiment first on a few worker-bees, so as to become acquainted with the method and the necessary dose.

I usually mark my queens in this way before they are mated, as it is the most favorable time, and I introduce them at once into mating nuclei. But if I were to deal with fertile queens in full colonies, I would cage them for a half day, as the odor of ether might cause the bees to ball them.

FERN. STOCKLI, Switzerland.
(Bulletin D'Apiculture).

(On page 200 of our June, 1914, Journal, Dr. Brunnich gave his method, which is very similar to the above. Dr. Brunnich uses lacquer, with white, red, yellow or green, changing the color each year, so that he knows at sight how old a queen is. Every 4 years the same color comes again. He also makes one, two or three points, or a longitudinal bar, on the corslet, as recognition marks. He says it is very important to be able to know, at a glance, the age of a queen. We can testify to the fact that such markings make the queens exceedingly conspicuous, when hunting for them.—Editor.)

Heating Honey as it Comes From the Extractor

The Collier Brothers, at Goliad, Texas, have an ingenious plan for heating their honey as it comes from the extractor. The picture gives a good idea of the heater, which is outside the building. A honey tank is set on top of a small furnace used for the firepot. Two pipes can be seen between the tank and the honey house. The honey runs from the honey house into the tank through the upper pipe and is returned to the building from the lower one. It is then strained while warm. In the October, 1917, issue of this journal is an account of the method of preparing honey for market practiced by N. E. France, of Wisconsin. Mr. France also heats his honey soon after extracting, finding that there is less trouble from granulation where the honey is heated at once.

Honey heater used by Collier Bros., Goliad, Texas.

The Sense of Direction

Most of our readers are aware of the attribution of a sixth sense to the honeybee—the sense of direction—by some scientists. On this subject we find the following in the "Bulletin Suisse," which they have borrowed from the "Echo des Alpes." It was written by Professor Emile Jung, of the Universite de Geneve.

"In order to inform myself upon the discussion, I renewed, a few years ago, upon our common honeybee, the experiments of Fabre. I placed a few in a paper bag, after having marked them so as to recognize them; then I carried them to several distances from their hive. I liberated them at one kilometer (.62 mile). They came back home regularly. At 3 kilometers a small number remained away, and as the distance was increased the number of the lost increased. Beyond 12 kilometers, none returned. It is evident that the "topographic sense" of bees is suited only to small distances; it therefore loses its mysterious character, and I explain it in a different way from Fabre's view.

"While they are working in the fields it is certain that bees make observations, as we do ourselves in our rambles. They note here a tree, there a stream, in another spot some peculiar grass; they thus become acquainted with the country they inhabit, the immediate environs of their home first, and later more distant spots. The older ones, having traveled much, have doubtless in their memory a number of guiding marks which enable them to always know just where they are and the shortest line home. The younger ones, or those newly brought to the region, who have not yet had time to make numerous notes, will get lost easily, for the same reason that we are easily lost in a strange city. Their experience does not guide them farther than a few hundred meters from their home; they are quickly confused, and that is why few of them return.

"The following experience confirms this opinion: I took, at the entrance of a hive situated near the Lake (Leman), 20 bees, which I marked and which I enclosed in a box. Taking them to the distance of six kilometers 3.9 miles), I turned them out in the middle of a meadow. Seventeen of them returned to the hive, some immediately, others as late as an hour afterwards. Three were entirely lost. The next day I again placed in a box the 17 bees which had thus found their way through the fields and meadows, but this time I carried them in a boat 3 kilometers out in the lake. They flew in different directions and finally disappeared. What became of them? No one knows, for they never returned home. The famous "topographic sense," with which some writers have endowed the bees, as they have done with ants, completely vanished in this experiment. Doubtless their ramblings had often led them to the meadow to which I had taken them the previous day; since 17 out of 20

found their way back. But on the lake, where there is nothing for them to find, and where, therefore, they had never wandered, the ill-fated insects, finding no guiding marks, no sign-post, to direct them in the proper direction, being left entirely to luck, were all lost, without exception.

"These experiments were not the only ones that I made upon the bees of our region, but all gave similar results."

We may add to this information that it is not necessary that the bees should have traveled the entire distance from which they are released, in order to find their way home. In seeking their way back they probably go in all directions until they recognize some familiar features of the country.

Releasing Bees From Packages

We have received some enquiry from readers regarding the manner in which bees are released from packages. In this connection we have been reminded that we failed to explain fully the picture on page 372 of our November number, where O. J. Jones is shown releasing the bees from a package.

The hive is made ready by removing four or five of the frames from the hive in which the bees are to be placed. The package is opened and the cage containing the queen is removed. If the queen is all right her cage is then placed between two of the combs, giving the bees opportunity to release her. The opened package of bees is then placed in the space left vacant by removing the frames and the cover placed on the hive. The bees will shortly leave the package and cluster on the combs. Where the bees are shaken from the package they sometimes take flight without marking the location, and a part of them become lost. Where released as above described there is little danger of losing the bees and no undue excitement.

Large Hives Again

With great interest I read your article "Advantages of Large Hives." Although it is not the usual custom to have hives of different size in the apiary, I use the 10-frame Langstroth, I wish to introduce some of the so-called Jumbo or Dadant-Root hives and some shallow supers.

1. Can you use regular Langstroth 10-frame bottoms and covers for the Jumbo hives, or are yours wider on account of the 1½-inch spacing?

2. As you prefer 1½-inch spacing, do you use only 9 frames and a dummy, or are the 10-frame hives for this reason a little wider?

3. How high are your shallow supers? Are they higher than the regular shallow supers for dovetailed hives, and could two of those supers, one on top of the other, be used for the regular Jumbo frames?

Wisconsin.

Answer—If you wish to use the Jumbo hive, 10-frame, with 1½-inch spacing, it will be necessary to use wider bottoms.

You can use the Jumbo hive with the same bottom as the ordinary 10-frame Langstroth, by using only 9 frames in a 10-frame hive. The Root make of hives are 14⅝ wide inside. The Lewis make are 14¼. If you use 9 frames spaced 1½ inches, you will have, in the first case 1⅛ inches and in the second case ¾ inch of room for a dummy. This dummy may be used on the cold side of the hive, i. e., the side which is exposed to high winds, usually west or north.

As we use the regular Dadant hive, we have not had opportunity to try the Jumbo, so have not had to solve this question in our practice. But we would recommend that you use the 9 frames and a dummy, if you do not wish to have bottoms of different sizes in your apiary.

This answers your first two questions. Regarding the third, we make our shallow supers, as stated on page 369 of the November issue, with a depth of 6⅝ inches, in the clear, so that the side bar of the frame is exactly 6 inches deep. This was the suggestion of Mr. Langstroth, years ago, when we began to use the extractor. You might make a super which would enable you to use two in place f a hive body. But we do not advise this. We have never seen the need of using shallow frames in deep bodies and have always kept the brood chambers and extracting supers as separate and distinct institutions. We have never regretted it.

Allow us to say that we have never urged anyone to change from the Langstroth to the Jumbo, simply because we do not know whether our friends feel willing to stand the greater expense of large hives. The matter has been discussed because several requests were made for our views and because the matter was mentioned in Gleanings. But we are very free to say that, personally, we prefer the large hives we use, known as Dadant hives, to any other style. Our experience with these hives is now of nearly 50 years, and as time passes we like them better and better.

The cheapest way, however, to make the change from shallow to deep hives is evidently through the use of the Jumbo, in the manner mentioned above.—C. P. D.

BEE-KEEPING FOR WOMEN

Conducted by MISS EMMA M. WILSON, Marengo, Ill.

Large Hives and Women Beekeepers

Nowadays the 8-frame hive is getting a black eye from all quarters, and seems to have no friends. It may be a little hazardous to say anything in its favor, but it has one advantage that cannot be denied, an advantage that appeals strongly to women. That is its lightness and the ease with which it can be carried as compared with heavier hives. This counts strongly where hives are carried into the cellar for wintering, and still more strongly where they are taken to outapiaries and brought back home in the fall for cellaring. To be sure, some strong man may be had to do the lifting at these times, even if it be some neighbor a mile away, but it frequently happens throughout the season that it is needed to move a hive from one place in the apiary to another, and at such times it is not the most convenient thing to call on a neighbor a mile away.

In the American Bee Journal for November occurs an interesting and instructive article by our editor upon the advantages of large hives. As might be expected from a man who is the soul of fairness, the merits and demerits of large and small hives are very fairly discussed, except in one particular, and that evidently from a misunderstanding. On page 369 occurs this: "The addition of a full story to a middling colony gives too much space above, in spring, when the weather is still cool, as it doubles the capacity of the hive at one stroke. The addition of this full story to a populous colony which is overflowing its brood-chamber, entices the queen away from the lower story, if the lower story is not sufficient for her laying capacity." Clearly the misunderstanding is that the extra story is added above. But among those who use 8-frame hives and add a second story in spring to give the queen more room, is it the general custom to give that room above, or below? What the custom is in this locality may bee seen from the following extract from "Fifty Years Among the Bees," page 105:

"When the colony is beginning to be crowded and there are no colonies needing help, and sometimes even when others do need help, a second story is given. This second story is given below. Putting an empty story below does not cool off the bees like putting one above. The bees can move down as fast as they need the room. Indeed, this second story is often given long before it is needed, and sometimes two empty stories are given, for it is a nice thing to have the combs in the care of the bees. They will be kept free from moths, and if any are moldy they will be nicely cleaned out ready for use when wanted.

"Sometimes when a colony is very strong and a story of empty combs is given below, a frame of brood is taken from the upper story and put below, an empty comb being put in its place above. But unless the colony is very strong, this hinders

rather than helps the building up."

This was the invariable plan of procedure, except in the year 1914, when all colonies were unusually strong by the middle of May, and then supers of combs were given above, not because it was the better way, but because it was easier for the beekeeper.

Whatever objection there might be to giving an empty story above early in the season, that objection does not at all apply when the empty story is given below. Instead of making an empty space for the bees to keep warm, the brood-nest is really warmer for having the empty story under it. The bees are not forced to make a start several inches away from the brood-nest, but are allowed to extend the brood-nest downward in a natural manner, extending it just as little or as much as to them seems good. Right here will occur to some the objection that bees would be loth to extend the brood-nest across two pieces of wood and an empty space. There seemed little evidence of this, although no doubt a continuous comb would be at least a little better.

A little thinking will show anyone that this two-story plan with 8-frame hives allows the bees to follow their inclination to keep their brood-nest in a sphere much better than they can do it in a single-story 10-frame hive. Like enough the Dadant hive, with its big frames, is better still in this respect, for in this hive the bees do not have to keep warm the space taken up by the bottom-bar above and the top-bar below. Yet if it should be thought that this space is any great hindrance to having both stories occupied by the queen, a paragraph on the page following the one already quoted is in point:

"I may say here that after a good deal of experience with colonies having two stories, I find that there is no trouble from having the queen stay exclusively in one or other of the stories. She passes up and down freely, keeping filled with brood in both stories as many combs as the bees will care for."

Dr. Miller says if he were beginning again he would have something larger than the 8-frame hive. In this view the woman in the case, the one who has been his helper these many years, does not concur. His objection that the small hive requires too close attention to avoid starving in winter is, in her opinion, overbalanced by the convenience and lightness of the smaller hive, and especially of the lighter supers. Of course, those women who are not willing to give the extra attention required by the smaller hives should use the larger or let bees alone.

(I acknowledge the oversight and readily agree that small hives are much more convenient for the ladies. —C. P. D.)

Shirley V. Johennig finding the queen. Though less than 3 years old, she has no fear of bees, and is expert enough beekeeper that she can detect workers, drones, and the queen. The hive above is only 20 feet from the back porch. Mrs. O. B. Johennig, Richmond, Va

Punic Bees

What is said by Ph. J. Baldensperger, page 375, about Punics, recalls our own experience with them. Some years ago, at the time when much was being said about Punic bees, John Hewitt sent to Marengo two Punic virgins. Of course, their worker progeny were hybrids, and we had only these to judge from. The most outstanding characteristic of these bees upon being first seen is one not mentioned in Mr. Hewitt's assertions, nor in Mr. Baldensperger's notes upon them. That characteristic is their blackness. They are black, with a blackness beyond any other bees.

According to our experiences, Mr. Hewitt is not far out of the way in claiming that they are good workers.

They are very cross, smoke seeming to have little effect upon them.

As to building sections, our experience tallied with Mr. Baldensperger's: Their sections were so watery as to make them utterly unfit for section work.

Their excessive propolizing was decidedly objectionable.

In considering the items here given it must be remembered that not pure Punics, but hybrids, are under consideration. On the whole, we did not consider it desirable to continue them after the first generation.

MISCELLANEOUS NEWS ITEMS

The Iowa Convention

The seventh convention of the Iowa Beekeepers' Association was held at Des Moines on November 6 and 7. Although the attendance was reduced somewhat by the epidemic of influenza, the convention was quite successful. Mr. Morley Pettit, of Georgetown, Ontario, who was formerly the Provincial Apiarist, was present and spoke at two of the sessions. Mr. Pettit had some very good moving pictures showing practical beekeeping; he also used a considerable number of lantern slides in illustrating his lectures. Dr. Phillips and Dr. Demuth, of the U. S. Department at Washington, were present and gave practical addresses. The program was excellent from start to finish.

In accordance with the policy of the Association, which has been to change officers frequently, a new board of officers was elected, as follows:

President—A. F. Bonney, Buck Grove, Iowa.

Vice President—, Hamlin B. Miller, Marshalltown.

Secretary-Treasurer—Prof. F. Eric Millen.

Directors—Edward G. Brown, Sargeant Bluff; F. H. Stacey, Iowa Falls; L. W. Elmore, Fairfield.

A Sign of the Times

We are again in receipt of Russian bee magazines. We have just received one from Kazan, a city of 175,000, on the Volga, about 450 miles east of Moscow. Does anybody doubt that Russia is going to come out of her trials with new ideas and progress? All that the Russian people need is a chance to govern themselves under democratic ideas.

Peace or War—Which?

Cross Bees! Crooked combs in ill-managed hives. When we attempt to take out honey, it leaks out in every direction. The bees become excited. The workers become robbers. Stings everywhere. War!

Gentle bees! Good hives, straight combs! No leakage! No robbers! No strife! No stinging! Peace!

Peace, sweet peace Is it so very difficult to secure it? Let us resolve that we will have only gentle bees, well-made hives, no crooked combs, no leaking honey, no robbers! Peace and plenty! A land flowing with milk and honey.

Kansas Meeting

The Kansas State Beekeepers will meet at Topeka January 7 and 8. A large attendance is expected. For particulars concerning the meeting, address O. A. Keene, Sec., 1600 Seward Ave., Topeka

Pennsylvania Beekeepers' Meeting

The next annual meeting of the Pennsylvania Beekeepers' Association will be held in Harrisburg January 21, 22, 23 and 24, in connection with the midwinter Agricultural Show.

A number of interesting addresses

have been promised. For information and particulars, address the Secretary, H. C. Klinger, Liverpool, Pa.

Switzerland

A letter from the editor of the Swiss Bulletin de la Societe Romande:

October 25, 1918.

Dear Mr. Dadant: I have your note. I am glad that you find something of interest in our little magazine.

You say that your crop is short. I am sorry to hear that, for sales are quick and, if you could export, there would be a great profit, as I believe the price is still higher in France than in Switzerland.

In most of Switzerland the crop was fine, such, in fact, that we have to look back a number of years to find one like it. The first fortnight of July was favorable, during 12 to 14 days giving crops of 10 to 12 pounds per day, and even as far as 22 pounds in a single day. It is honeydew, but of good quality, though very dark. It sells as readily as fine spring honey, at 57 cents per pound, retail and 48 to 49 cents wholesale.

The war situation is favorable, thanks to the formidable help of your country. The Boches are "letting go" and everyone says "thanks to the United States." Your country is now writing one of the finest pages of history.

Beekeeping is getting a new and considerable elan and our little magazine has an increase of a thousand subscribers. We are just now making an investigation, through the presidents of the association branches, concerning the value of honey as an "anti-flu" food. It has been ascertained that beekeepers are generally immune. Just how correct this is we hope to find out.

Cordial and respectful salutations,

SCHUMACHER.

(The honeydew of Switzerland must certainly be better in quality than what we harvest in this country. We have yet to find honeydew that could bring more than half the price of fine clover honey.—Editor.)

Nebraska Meeting

The Nebraska Honey Producers' Association will hold their annual meeting on Wednesday, January 22, at the University State Farm at Lincoln, Nebr., and have arranged a very full program for the day.

In the morning session Mr. F. C. Pellett, of the American Bee Journal, will give an illustrated talk on "Honey Production as a Business." This will start at 9 o'clock. Another thing in the morning will be a discussion on county organization. This will be led by F. G. Maxwell, of Douglas county, who is secretary of that branch. The Douglas county branch is becoming a very live organization. It has already sent in an order for supplies for members and sent a committee to the extension service of the State asking for aid in getting an extension man for this State, and prospects are becoming brighter every day for such help.

The afternoon session will begin with the business meeting, a new constitution will come up for adoption and everyone who takes interest in the honey business should be present and see that everything is done right.

After the business meeting Professor F. Eric Millen, the State Apiarist from Iowa, will give a talk on "Beekeeping and Beekeepers, as Seen by a Bee Inspector." Several Nebraska beemen who had time, have been to the Iowa meetings and they were so loud in their praise of Professor Millen that we have made arrangements to have him speak.

W. P. Southworth, of Sioux City, will give a talk on "Modern Equipment of the Apiary." Mr. Southworth is President of the Western Honey Producers' Association and they have made such a success of their co-operative work that we have found it desirable to hear how they do their business.

At the finish of our meeting we will hold an open discussion or question box, which will be handled by Mr. H. C. Cook, of Omaha. In Mr. Cook we have a man who has proven what Nebraska is capable of producing when it comes to honey, and I am sure that nearly every beekeeper in the State knows him.

O. E. TIMM, Sec.
Bennington, Nebr.

Heat Insulators for Beehives

The last quarterly report of the Michigan Agricultural Experiment Station contains an article on the above subject from the pen of R. H. Pettit based on experiments conducted with the aim in view of determining the value of different materials for the purpose of wrapping bees wintered out of doors. We quote the article in its entirety:

"So many claims have been made by users of corrugated paper for the purpose of wrapping and thus retaining heat in winter beehives, that it seemed worth while to test the heat insulating value of corrugated paper as compared with several other forms of packing or wrapping material in common use. These various materials were compared with dead air spaces in standardized chambers of cubical form, the chambers being double-walled, and each being provided with a 2-inch space on all sides, suitable for packing the materials to be tested.

"The experiment was started in 1916, being planned by the writer and started by Mr. G. C. Woodin, an assistant in the experiment station at that time. The observations were completed by Mr. P. B. Wilteberger, the successor of Mr. Woodin, who also computed the resulting data.

"These chambers were stored in a comparatively cool place and a constant source of heat applied electrically inside. Readings were taken, at intervals, of the temperature maintained inside the chambers and these were checked against a chamber of similar construction, but which was provided merely with dead air spaces on all surfaces.

"As will be apparent, the results aimed at are merely comparative. The materials tested were corrugated card board, dried leaves, planer shavings and mineral wool. In all cases enough material was used to supply a 2-inch layer of the material under observation. From our tests it would appear that the heat insulating values of the various substances compare about as follows:

Dead air space	18
Corrugated card board	33
Planer shavings	34½
Mineral wool	35½
Forest leaves	41

"Omitting dead air space from consideration, then corrugated card board, the most expensive material used, is least efficient, and ordinary leaves raked up, dried and firmly packed, give the best results of any. They have the further advantage of being easily obtained and are the cheapest material that we could find.

"Tests were also made to determine the relative rates of heat loss when one surface of the chamber was left unpacked. When the bottom surface was unprotected there was a loss of about 3½ degrees Fah., in temperature. One unprotected side produced a loss of 4 degrees. With the top surface alone unprotected, a loss of nearly 5 degrees resulted, which plainly shows us that the loss in temperature from leaving the bottom unprotected is very considerable, indeed."

R. H. PETTIT,
Entomologist of experiment Station.

Spring Losses—Caucasians

The difficult problem of this locality is to get the bees through the spring from the middle of March to the first of May. My loss during this time has never been less than 25 per cent. The loss occurs with both the outdoor and the cellar wintered. I believe the cause is the absence of bloom for the bees to work on during the days they can fly. Pollen substitutes and feeding do not seem to be able to check the loss.

Last April, when I set the bees out of the cellar, I left a nucleus in the cellar to see how long it could be kept there. It stayed there until the first day of May. The cluster at this time was no larger than a quart measure. Salt sage was beginning to bloom when I set it out, and there was soon an abundance of pollen for the bees to gather. Instead of dwindling, as the others did, this nucleus held its own, was soon gaining, and was ready for supers before many of the colonies that had been set out the first of April. I believe the difference is that the bees of the nucleus were kept inactive till there were natural stores for them to gather. By reason of this experience I intend to keep 300 colonies in the cellar till the first of May next spring.

In the season of 1915 I procured a Caucasian queen to be used as a breeding queen. During the past season three daughters of this queen gave me a total of 850 pounds, 125 pounds of which was extracted. This

is by far the largest yield any three queens have given me in one season.

JOHN HENDRICKS,
Powell, Wyoming.

New Jersey Beekeepers' Association

The annual meeting of the New Jersey Beekeepeers' Association will be held in Trenton, N. J., January 16-17, 1919. The program follows:

Thursday Morning, Jan. 11

10:00—Report of Secretary-Treasurer.

10:30—Address by President Barclay.

11:00—Economical Extracted Honey Production, Allen Latham, Norwichtown, Conn.

Thursday Afternoon

1:30—"An Economical and Efficient Hive Paint." E. D. Warde, Arlington, N. J.

2:00—"Survey of Beekeeping in Morris and Somerset Counties." E. G. Carr, Deputy Bee Inspector for New Jersey.

2:30—"Honey Production as a Business." Morley Pettit, Georgetown, Ont.

3:15—"Queen-Rearing for the Honey Producer." Allen Latham, Norwichtown, Conn.

3:45—"Outdoor Wintering of Bees." E. G. Carr, Deputy Bee Inspector for New Jersey.

4:15—"Boy Power in the Apiary." R. D. Barclay, President New Jersey Beekeepers' Association, Riverton, N. J.

4:30—"The Value of Agricultural Fairs to the Honey Producer." C. N. Greene, Apiary Adviser, Harrisburg, Pa.

Thursday Evening

7:15—"Honey Cookery." Mrs. Frank App, State Leader in Home Economics, New Brunswick, N. J.

7:45—"Beekeeping." Morley Pettit, Georgetown, Ont. A popular lecture, illustrated by three reels of motion pictures.

Friday Morning, January 17

9:00—Unfinished business and election of officers.

9:30—"Extracted Honey Production." Morley Pettit, Georgetown, Ont.

10:15—"The Two-Hive-Body System of Beekeeping." Allen Latham, Norwichtown, Conn.

11:00—"The Outlook for the Honey Producer in the East." C. N. Green, Apiary Adviser for Pennsylvania.

E. G. CARR, Sec.-Treas.,
New Egypt, N. J.
RICHARD D. BARCLAY, Pres.,
Riverton, N. J.

Michigan Meeting

The annual convention of the State Beekeepers' Association will be held in Lansing on January 21-23. The place of meeting and other particulars will be announced upon the program, which will be in the mail by January 1. Anyone desiring a program should write to the Secretary, East Lansing, Mich. The headquarters will be the Detroit and Kerns (Wentworth) Hotels. A banquet will be held on the evening of January 22. Everyone should be on hand for the President's address, which will be delivered at 1 p. m. on the 21st. This will be followed by the following subjects and others to be announced in the program:

"Large Hives," C. P. Dadant, E. R. Root, J. N. Harris and others.

"Co-operative Marketing," J. N. McBride, State Director of Markets.

Address—Hon. Geo. A. Prescott, Federal Food Administrator.

"The County Association," Miss A. Sly.

"Two Queens in One Hive," Arthur Sharrow.

"Combless Packages," E. A. Leffingwell.

"Honey Resources of the Upper Peninsula," B. F. Kindig.

Other subjects and general information on printed program.

B. F. KINDIG, Sec.,
East Lansing, Mich.

Minnesota Meeting

Because of influenza, the annual meeting of the Minnesota Beekeepers' Association was postponed from December to January 2 and 3, Room 4, Plant Pathology Building, University Farm, St. Paul, Minn.

L. V. FRANCE, Sec.

National Beekeepers' Association

The annual convention of the National Beekeepers' Association will be held at the Hotel La Salle, Chicago, February 18, 19 and 20, 1919.

The complete program has not been arranged, but the following speakers expect to attend:

E. R. Root, editor of Gleanings, "Past, Present and Future of Beekeeping."

C. P. Dadant, editor of the American Bee Journal, "International Beekeeping."

E. D. Townsend, editor of the Domestic Beekeeper.

Dr. E. F. Phillips, Bureau of Entomology, Washington, D. C., "Factors Influencing the Secretion of Nectar."

Prof. F. Eric Millen, Iowa Agricultural College, "Beekeeping as Seen by a Bee Inspector."

Prof. E. G. Baldwin, Extension Service Dept., Purdue University, Indiana..

Kenneth Hawkins, Plainfield, Ill., "Beekeeping in Dixie."

Prof. H. F. Wilson, University of Wisconsin, "Organizing Local Societies."

Chas. B. Justice, General Manager California Honey Producers' Co-operative Exchange.

Dr. C. C. Miller expects to attend one day, if he is able.

A question box will be featured at each session and with the very highest authorities on the different branches of the beekeeping industry present, no beekeeper can afford to miss this convention.

FLOYD MARKHAM,
Sec.-Treas.

Western New York Honey Producers' Association

The postponed meeting of the Western New York Honey Producers' Association will be held at the Genessee Hotel, Buffalo, N. Y., on Friday and Saturday, January 10 and 11, 1919. Program on request.

HOWARD M. MYERS, Sec.,
Ransomville, N. Y.

UNITED STATES DEPARTMENT OF AGRICULTURE

Bureau of Markets

Honey arrivals since last report:

Medina, Ohio—57,400 lbs. from Ohio and 34,500 lbs from Idaho arrived.

Hamilton, Ill.—No arrivals.

Keokuk, Iowa—2,760 lbs. from Iowa and 74 lbs. from Illinois arrived.

Shipping Point Information

San Francisco, Calif., Nov. 30—Supplies light. Demand and movement moderate. Cash to producers at country loading points: Extracted, per pound, water white, 22-23½c, sage white, 20-23c; light amber, 18-20½c; dark amber, 18-19c. Beeswax: supplies moderate, 35-40c per pound.

Los Angeles, Calif., Nov. 30—Supplies very light. Very few sales. Cash to producer on farm: Extracted, per pound, white, supplies practically exhausted, too few sales to establish market; light amber, sage and alfalfa, 21½-22c; amber, no sales reported. Beeswax, 36-37c per pound.

Chicago—1 Utah, 1 Colorado and approximately 1,000 packages from Illinois, Wisconsin and Michigan arrived. Demand and movement slower, little change in prices. Sales to jobbers, Wisconsins and New Yorks, extracted per lb., buckwheat, No. 1, 21-22c; Utahs, Colorados and Illinois, extracted per lb., white, No. 1, 25-27c; amber, 22-24c; comb, No. 1, 24-section cases, $6-6.50. Beeswax, 40c per pound.

Denver—Approximately 40,000 lbs. extracted arrived. Receipts moderate. Demand and movement slow; no change in prices. Few sales. Sales to jobbers, extracted per lb., white, mostly 25c; light amber, 24c; comb, 24-section cases, white No. 1, $6.30; No. 2, $5.85. Beeswax, 38c per pound.

Kansas City—No arrivals, no cars on track. Supplies light. Demand and movement slow, little change in prices. Quality and condition good. Few sales. Sales to jobbers, Missouri, extracted, no sales reported; comb, light amber, 24-section cases, No. 1, $8.50; Colorado, light amber, 24-section cases, No. 1, $7.50-7.75.

Cincinnati—1 Nevada arrived, L. C. L. receipts moderate, nearby receipts very light. Sales to jobbers: Extracted, per lb., demand and movement slow, little change in prices. Alfalfa and sweet clover 29-30c, amber, no sales reported; comb, demand and movement good; white, 24-section cases, No. 1, $7-7.25; fancy, $7.50. Beeswax: demand slow, few sales, yellow average 40c per pound.

Minneapolis—Home-grown receipts light. Demand and movement good. Supplies moderate. Sales direct to retailers, Californias, Minnesotas and Colorados, extracted, per pound, prices slightly higher; quality and condition generally good; 60-lb. cans, 26½-30c; Colorados, comb, no change in prices; quality and condition good, white fancy, 24-section cases, $7-7.25.

St. Paul—Home-grown receipts light. Supplies moderate. Demand and movement good; no change in prices. Sales direct to retailers, Colorados and Minnesotas, few sales. Extracted per lb., mostly 30c. Colorados, quality and condition generally good; comb, white fancy, 24-section cases, $7-7.25.

Spokane—No arrivals; supplies light. Demand and movement slow; very few sales, on account of high prices. Quality and condition good. Sales direct to retailers, Idahos, extracted, per lb., 5 and 10-gallon cans, white alfalfa, 27-28c; comb, white alfalfa, 24-section cases, No. 1, $7-7.25; No. 2, $7.

Philadelphia—5 barrels southern, 4 kegs and 75 cases containing 10 gallons each from New York of extracted and approximately 900 cases of comb from New York arrived. No demand, very few sales. Sales to manufacturer, extracted, southern, $2.55-2.60 per gallon.

New York—400 barrels and 50 tierces from Porto Rico arrived. Demand moderate; little change in prices. Porto Rico, extracted per gallon, $2.35-2.60; mostly $2.45; California extracted, per lb., white, 27-29c; light amber, 24-27c; New York Comb, 24-section cases, 30-35c per lb. Beeswax: 320 bags from Porto Rico arrived, demand moderate; imported, dark, 40-42c per lb.; domestic, light, 42-44c per lb.

Cleveland—24,600 lbs from Nevada arrived. Demand slow; no change in prices. Sales to bakers and wholesale confectioners; western, extracted, per lb., white orange blossom, 60-lb. tins, 33c; light amber and sage, 31c; white clover, 28-30c.

St. Louis—Supplies light. Demand moderate. Sales to jobbers, southern extracted, per lb., amber, barrels 24-25c. California and southern, extracted, per lb., amber, cans, 26-28c; Comb, practically no supplies on market. Beeswax: prime, 41½c per pound.

Portland—Demand and movement slow. Quality and condition ordinary, mostly amber. Sales direct to retailers, extracted per lb., 24-27c; comb, 24-section cases, $6.75-7.75, according to weight and grade.

DR. MILLER'S ANSWERS

Send Questions either to the office of the American Bee Journal or direct to
DR. C. C. MILLER, MARENGO, ILL.
He does NOT answer bee-keeping questions by mail.

Wintering in Cellar

I have been reading your answers to bee-keepers for the last ten years and have found almost every question pertaining to bees answered. Would it not be better to winter bees in a house cellar than out of doors, even though the temperature gets near the freezing point. I had one colony which I neglected to pack last fall. About the 15th of December I put it in the cellar without packing of any kind. The entrance was nearly closed with dead bees and ice, but it came through all right and gave me over 100 boxes of surplus, or as good as any of my colonies. NEW YORK.

ANSWER.—Occasional cold in a cellar is not so bad as steady cold. I would rather risk a cellar with the temperature occasionally below the freezing point and at other times at 45 degrees or higher, than one with a steady temperature of 38 or 40 degrees. Again, much depends on purity of the air. I would rather risk 40 degrees with the air constantly changing than 50 degrees with stagnant air. The fact that you did well with the cellar last winter is a pretty good indication that you ought to do as well other winters.

Using Old Combs

1. I have six empty hives; the bees, I believe, died from European foulbrood. The hives have not contained bees for two years. Do you think I could put bees into these hives next summer and leave the old comb in them without danger to the bees? If this is not possible, please let me know how I could "cure" the hives.

2. If I would send you a piece of comb could you tell me what kind of disease the bees died of, or what kind of foulbrood it is?

3. Does it make any difference whether comb is black or white when it is sent to a manufacture to be made into foundation?
WISCONSIN.

ANSWERS.—1. If the disease is of the European sort, and not American the hive and all its parts may be used without "curing," except the combs. In an apiary entirely free from European foulbrood I should hesitate about using them. As to "curing" them, that is, getting rid of all the germs in them, that possibly might be done by using them for one season as extracting combs; although some might be over-anxious enough to think there would be danger in that.

2. No; it would likely do no good to send samples to me; send them to Dr. E. F. Phillips, U. S. Department of Agriculture, Washington, D. C. If you write to him in advance he will send you a box in which to mail the sample, and after receiving sample will advise you fully what to do, all without charge.

3. No.

Sugar Feeding in Cellar

I have about 170 colonies of bees and they are very light and I am afraid that I am going to lose the biggest part of them. I have put them in the cellar just the last few days, and it really makes my heart ache to see them in such a condition and that I am unable to do anything for them. The honey crop here was almost a total failure. Hardly any of the bee-keepers got any honey. I got a little, and when I filled out my application for sugar I told them just what I had, but before I knew that I could not get sugar I had sold a part of my honey. I fed 900 pounds of it and still the bees need more, and I have almost begged for sugar, but to no avail; they wrote me that I would have to take my medicine, which was, I think, rather a hard way to talk to a fellow. They claim that I was profiteering, but such was not my intention. I had honey enough to have carried my bees through if I had fed it all, but at the time that I fed I thought I had given them enough. I got, all told, 2,800 pounds. Now I have some hopes that things will shape around before long so that sugar will be available and what I would like to have you tell me is how can I feed my bees in the cellar. I have never had to feed much, and don't know anything about cellar feeding and have no receipt for making candy for that purpose. I have put the light colonies on top as near as possible, but of course there are so many they could not be all on top. What would be the consequences if sugar syrup was fed in the cellar?

I would be very thankful for information as to how to proceed in case that I get sugar and would gladly pay you for the information if you would take anything.

Is there any way I can feed the lower colonies in the tiers. ILLINOIS.

ANSWER.—If you feed syrup in the cellar it is likely to stir up the bees to such an extent as to make serious trouble. Candy is far safer. To make the candy is not so very difficult. Into hot or boiling water stir as many quarts of granulated sugar as there are quarts of water. Let the sugar be stirred in slowly, stirring all the while. Pouring in the sugar will, of course, cool down the mixture, and that is all right, for you should make sure that all sugar is thoroughly dissolved before it begins to boil, lest some of the undissolved sugar be scorched, which would be fatal to the bees. From time to time drop a little of the syrup into cold water. It will be ready to pour out when it is brittle upon being dropped in the cold water, and yet appears a bit soft and tough when put in the mouth. Have the top of a table perfectly level, and lay on it sheet of waxed or paraffined paper, with wooden strips one-fourth inch thick under the edges of the paper. As soon as you find your hot material is at the right stage, pour it onto the sheets of paper, and of course when it is cool you will have sheets of candy one-fourth inch thick. When it begins to harden, take a knife and score the places where you want to break the candy, so as to make it the right size. All you have to do now is to lay these thin cakes of candy on top of the top-bars and cover up warm.

The cakes of candy being so thin, it may be you can succeed in shoving them into the entrances of hives not on the tops of the piles. If there is considerable space between the floor and the bottom-bars it will be advisable to thrust thin strips of wood under the candy, so it will be raised up against the bottom-bars, thus making sure that the bees will get at the candy. Even then a weak colony might not get down to the candy. It might help to warm up the cellar, and possibly to blow into the hive entrance.

Color of Crossed Bees

1. What is the color of worker bees from a tested leather color Italian queen?

2. How can the difference between the hybrid and 3-banded be detected if the hybrid is a cross between blacks and goldens?
NORTH CAROLINA.

ANSWERS.—1. When color enters into the naming of any kind of bees, it is the worker and not the queen that is considered; so when a leather-colored queen is mentioned it means that her workers are of that color.

2. The workers of a hybrid colony will be mixed in appearance; some of them may be like one side and some like the other, or the same bee may be midway in appearance between the two.

Requeening

Next year I intend to buy untested queens for each colony, then just as clover opens up I will go to each colony and take the old queen with one frame of brood and bees and start a new colony. Could I give the old swarms the new queen right away? Would they be safe from swarming the first summer? Would you approve of this method?
MINNESOTA.

ANSWER.—Yes, you can give the new queen right away, of course with the usual precautions upon introducing and the likelihood is that there would be no swarming until the following year, it being taken for granted that the new queen will be one that has been laying but a short time. But I think you will be wise to make a change in the program, proceeding in this way: Instead of taking away

the queen with one frame of brood, leave the queen with one frame of brood in the old hive and take away all the rest of the brood with adhering bees, introducing the new queen to these latter bees. In this way the introduction of the queen will be safer, for the field bees will all return to the old queen, and it is the old bees chiefly that make trouble when a new queen is introduced. There will also be less danger of swarming.

It is quite possible that you will reply, "Yes, but I would like to have the new queen with the main colony, so that there would be a bigger harvest." Believe me, the harvest depends chiefly on the force of bees left by the old queen, and the bees that will come from the brood she has left. In a good season, especially if you have a fall flow, you may get surplus from both divisions, whereas, if you take away the queen with one brood, you can hardly expect any surplus from this offshoot.

(In addition, a new coloniy, made with only one frame of brood and bees, with the old queen, and put on a new spot, may be too weak. At the same time, the colony from which this one brood and queen have been taken may remain strong enough to prepare queen-cells and swarm with the new queen introduced to it. So the method advised by Dr. Miller is the better method, by all means, if no natural swarming is wanted.—Editor.)

Miscellaneous

1. What caused my bees to swarm out and then return and carry out the queen?
2. I intend to transfer my bees in Jumbo hives. Can I produce comb honey with this hive? Which would be the better, the 8 or 10-frame?
3. I have heard that bees will not stay in a home-made hive unless it is washed with salt and water. Can you tell me if this is true?
4. Do you think I can buy nuclei on Jumbo frames?
5. Would a 3-pound package of bees with queen do well if put in a Jumbo hive with frames of foundation?
6. Do untested queens prove successful?
7. What do queen breeders mean by the term (selected) tested queens?
8. How long does it take a virgin before she is a laying queen?
9. What should be the distance between bottom-board and frames and between top of frames and super?
10. How long will bees live without a queen?
11. Will there be a big demand for comb honey the coming season?
12. Will the pound-package men have as much trouble filling orders the coming season as they had last year?
13. What is the size of the Dadant shallow extracting frames?
14. What depth of shallow extracting frames would prove the best on Jumbo hives?
15. Will bees chew cardboard if used in the hive as a division board? ILLINOIS.

ANSWERS.—1. It is quite possible it was a second swarm, having two or more young queens. Such swarms not infrequently return to the hive, perhaps because the chosen queen has been fertilized and then the superfluous queens are killed and carried out.

2. Yes, and perhaps the larger hive may be better.
3. That's all bosh.
4. Doubtful.
5. Yes, of course, with a good season.
6. The great majority of them do; but of course some are unsatisfactory.
7. It's the ones they pick out as being better than the average, in their opinion.
8. She is likely to be laying when 8 or 10 days old, but sometimes later.
9. About ¾ and ¼ inch, respectively.
10. In the working season such a colony will last something over two months.
11. I don't know, but expect a good demand for both comb and extracted.
12. I don't think so.
13. Six and a quarter inches in depth.
14. About 6 inches, likely.
15. Sure.

Pound Packages

1. What can I do to keep the little worms or maggots out of comb honey after it is taken off the hive and put away for winter? I put some up in pound cartons and when I went to use it, it was full of worms.
2. Can I send south and get pound packages of bees with queen? When they come can I go to my strong swarms, take out frame of brood and give it to them? Will they be strong enough to take care of them? Or would it pay better to get 2-pound packages?
3. Will it weaken the swarms I take the brood from enough to affect their honey production?
4. I requeened some black bees with Italian queens about September 20. I looked about three weeks later to see if they accepted their queens. I found every cell full of honey or beebread, but could not find the queens. Do you think it was too late for them to lay eggs this fall?
5. If the queens are dead will they go through the winter. Can I requeen in the spring?
6. Do you think a few cells of American foulbrood will disappear in a colony of bees by keeping it strong with a prolific queen? NEBRASKA.

ANSWERS.—1. The best thing is to have Italian bees that will keep the moth at bay. Even with them it is possible that there may be some trouble with "worms" in comb honey, in which case you should fumigate the combs before the little pests come to good size, say two weeks after the combs are taken from the hive. You can fumigate with burning sulfur, in which case the eggs of the moth will be unharmed, and you must fumigate again when they have hatched, say two weeks later. If you fumigate with carbon disulfide no second fumigation will be needed, as eggs and all will be killed.

2. You may do very well with a one-pound package, but a larger package with more combs will be better on the whole.

3. Yes, taking away brood from a colony will lessen its yield, but the gain may be more than the loss.

4. It may have been; it is impossible to say.

5. Yes; but a queenless colony is not likely to winter so well as one which has a queen.

6. No; instead of disappearing it will increase.

Uniting

This is not a good beekeeping locality, and I am not a good beekeeper. I am looking for a system as near automatic as possible, that will yield about 10 pounds of chunk honey per colony in an average year. I think I could get some honey by the old method of smothering half the colonies every fall and then dividing the remainder every spring, as they seem to get enough to winter even when too weak to draw out all the combs. Do you think it would be practicable to divide a colony in spring and put one-half with the old queen in another hive on top of the old one, with a 3-inch double screened hole in the center of cover of lower hive, so that the two hive scents would remain similar; then kill the top queen in the fall and take all the honey that wouldn't go in the lower hive? I suppose it wouldn't do to unite them without killing one queen, even though she happened to be hard to find. MASSACHUSETTS.

ANSWER.—Your scheme might work to your satisfaction sometimes, and sometimes not. There would be no trouble uniting in the fall, for you could unite without finding either queen, leaving to the bees or the queens themselves which should be left. But there might be trouble galore long before fall. I suppose you are counting that when you put the queen in the upper story the bees will rear another queen in the lower story. Very likely; and when the first queen emerges the bees may decide that that is a good time to swarm, the very thing you are trying to avoid. Why not vary the plan, making it the Demaree plan? When the season has advanced so that you think there may begin to be danger of swarming, put all but one brood in an upper story, leaving the queen with the one brood in the lower story, vacancies being filled out with drawn combs or full sheets of foundation, and a queen-excluder between the two stories. A week or ten days later kill all cells in the upper story. Then you will be saved all trouble of uniting in the fall, and have only honey above the excluder. Of course this honey will be in old combs, but it would be in your proposed plan. The best thing will be to extract it, and you should not be satisfied with any such amount as 10 pounds per colony.

Moving Bees

I have 60 colonies in 10-frame, dovetailed hives, and I am going to have them moved 700 miles by freight. Will you please tell me what is the best way to pack them? ILLINOIS.

ANSWER.—In the limited space allowed I cannot go into very full particulars, but will say in general terms that you must plan so that the hives shall not be allowed to move about; that they shall be placed so that the frames of the hive shall run parallel with the rails of the road, and that plenty of ventilation must be allowed if weather should be warm, and if a very hot spell should occur water must be sprinkled upon the bees.

A Start in Beekeeping

I have always been afraid of bees. But a swarm took possession of some empty space under the floor of my chicken house this summer and I had to do something. After much reading, I made a hive according to directions and said to the bees what Sir Nigel said to the yellow horse: "I am your man and you are my bees."

I puffed a bit of smoke at them and in they went. but sooner than I could say it they came out again in force, so I put down the smoker and pried up the floor. That broke the combs loose from the floor boards and left them on the ground, and the bees sticking to their combs for dear life. They let me lift them up off the ground, one piece of comb at a time, and put them in the hive.

It was only a little while till I had them so tame I could go out and lift off the cover and tickle their little whiskers, or whatever you call it, and they seem to be as glad to see me as to see their queen.

But, doctor, how should a new fellow like me go about it to build up an apiary? COLORADO.

ANSWER.—That question nearly takes my breath away. One way is to serve an apprenticeship of seven years or less with some good beekeeper. Another way, one that will probably suit you better, is to spend a part of your time this winter studying a good textbook on bees, such as Dadant's Langstroth, and then be ready next spring to go at the matter understandingly. Now that's a very general answer, isn't it? Well, your question is a very general question. In the meantime it will be no harm for you to get the book containing my answers to 1,000 beekeeping questions, and when you find some particular question arise that does not seem answered by any book you have, send that question to me and I'll do my best to answer it in this department. That's just what this department is for.

Carniolans or Italians—Kind of Hive

1. Would I get better results in raising a nucleus colony with a Carniolan queen than I would with an Italian? My beebooks say that Carniolans rear large quantities of brood.
2. What kind of hives would you use (double-walled or single) to winter bees out of doors in northern Indiana?
3. What do you think about A. G. Woodman's Protection Hive? INDIANA.

ANSWERS.—1. You would probably find not much difference, and I would expect as good results from Italians.

2. Like enough single-walled, well packed.

3. I have had no experience with it. but suppose it to be a good hive.

Sheets of Foundation Short

I use the regular Hoffman frame, and I bought some comb foundation of a company this fall, and it is about three-eighths of an inch shorter than the length of the frame, leaving a space of about three-eighths of an inch between the foundation and the end-bar.

Would you advise me to put the foundation in the center of the frame, or put it to one side and leave the three-eighths inch space on the other side, between the foundation and the end-bars? VERMONT.

ANSWER.—With proper precautions it is possible to have foundation cut so as to fill the frame entirely, and have it built out all right; but the foundation is quite commonly inclined to do a little stretching, in which case there is some buckling, making bad work. So your foundation was probably advisedly made a little scant so a little stretching could be adjusted, with the expectation that you would allow the space to be equal at the two ends.

Queen Cells—Queen Introduction—Brood Wintering

1. Can one or more queens be successfully wintered in one colony? If so, what is the method?

2. Are queen cells ever built horizontally? If so, are queens that are raised in them as good as those raised in vertical cells?

3. Is there any noticeable difference in the activity and production of colonies whose entrances face the west, as compared to those facing east?

4. What are the good or bad points of a frame with end and bottom bars the same width as the top bar, other dimensions being standard?

5. I introduced queen to colony 24 hours queenless, about September 23. The queen was weakened, some attendants being dead. A week later I could see a few golden bees on the combs among the blacks, but found no queen. Quit feeding on November 1. No brood. Saturday, November 2, the new queen arrived, was placed in the cage on frames above the cluster. At 4 p. m. Monday evening candy was nearly eaten through. Tuesday evening about half of the attendants were dead and beeway not quite through the candy. I removed the screen on edge of cage and replaced it above cluster. Wednesday evening still some candy in cage; all but queen and two attendants dead; queen still active; removed wire screen and placed case on its side over cluster November 16 bees were flying nicely, but no indications of robbing. November 17 opened hive and found plenty of stores and about 200 cells of capped brood; also about a dozen cells of brood in the earlier stages of development, all apparently unharmed. Every bee was dead, the hive bottom covered; also the ground in front of the hive was strewn with dead bees. The queen had what seemed to be a sting in her side near the base of the wing What do you think was cause of this?

6. Please recommend a good book on the honey flowers of North America.

7. Is catnip a good honey plant?

8. I have some old brood combs that are quite black. Can they be bleached and still be good for brood?

9. Can a colony winter too warm? For example, if packed in sawdust so that little or no heat would escape and weather conditions would have to vary extremely to affect it from the outside?

10. March, 1909, page 101, you say: "Let bees swarm and * * * 21 days later add rest of bees to swarm and melt up the combs" Why on the 21st day? If a new queen is present in the old hive, will there not be brood then?

ANSWERS.—1. No; although two or more nuclei, or two colonies, may be wintered in the same hive, separated by thin, bee-tight partitions.

2. In rare cases, where the cell is crowded for room, as on the edge of a comb next to a bottom bar, I've seen them horizontal. They're likely as good as any. I've turned cells upside down, and the queens from them had a stubby posterior.

3. I've had them facing all ways and could never make out any difference, although it is possible that in some cases there might be a difference.

4. The Miller frame, which I have been using for years, has top-bar, bottom-bar and end-bars uniform in width, 1⅛ inches, throughout their whole dimensions I'm not sure that either advantages or disadvantages are worth quarreling about. The frame is a trifle stronger for the greater width, and the smaller space between end-bars and bottom-bars makes a little less building of bits of extra comb. The wider bottom-bar is more in the way of an uncapping knife.

5. I don't know. You say there was no indication of robbing on the 16th, and plenty of stores the 17th, so that bars out robbing, and I have no other guess.

6. There is no such book published that we know of. However John H. Lovell has published a book, "The Flower and the Bee," which is on the pollen plants. Our associate editor, Frank C. Pellett, is writing articles on the honey plants, and these will be published in the American Bee Journal from time to time.

7. Excellent.

8. I don't think so; the bees prefer the blackest.

9. I doubt about the "too warm"; but it's just possible too much packing might under some circumstances make it too cold, not allowing the sun to heat up the hive on a warm day. But I may be mistaken in that.

10. The swarm usually issues when the first queen cell is sealed. Then in 21 days the young queen would hardly have more than eggs, or so little brood as to be negligible.

Moving Bees in Oregon

We wish to move our apiary of about 120 colonies during February or March, 18 miles by river boat, then transfer to box-car, and 150 miles by rail. This is a very rough and mountainous country, and travel is often slow and uncertain. Bees may have to be shut up for several days, probably not less than 5 or 6. Though we have but little freezing weather there is no really warm weather during our winter months. With a few sunny days now and then bees fly more or less all winter, often bringing in some pollen. Our practice is to leave on a shallow super containing some honey for winter stores, which in moving will give them extra air space.

1. How much top ventilation, if any, would
2. If bees are active they will need water
2. If bees ar eactive, will they need water while shut in?. It is nearly always cool here in the shade, even during summer. Would like suggestions on moving bees under our conditions. Honeyflow starts here in April. OREGON.

ANSWERS.—1. Something depends upon the amount of bottom ventilation. If your hives are like mine, with entrance 2 inches deep, and 2 inches space under bottom-bars, in a cool time there might be no need of further ventilation. Otherwise it might not be safe, and it may be better to have wire cloth the full size of the top.

2. Under such circumstances they are likely to need water, especially if they crowd against the opening, in which case a very strong colony might be suffocated. Spraying with water will not only quench their thirst, but cool them off and drive them back.

Large Packing Cases

I packed my sixteen colonies of bees in winter case big enough for same by making two rows of them, eight in row, in block form, back to back, and snug in rows; would they mix with one another when out on flights, enough to hurt?

I use matched lumber 16 ft. long to make this case. I find it cheaper, also much easier. NEW YORK.

ANSWER.—With eight colonies in a straight row standing close together, there will be some danger of mixing if all are just alike, with no objects to help mark the location. A tree or a post standing in front of the hives will help greatly. If there is nothing of the kind, you can stand a board, leaning against the hives at the middle of the row. It might be better to have two boards, one 5 feet or so from each end.

Feeding in Winter

1. I have 29 colonies of bees that will need feeding in early spring. I don't want to disturb them to note their condition, on account of the packing, which I want to leave on until warm weather. I want to feed in the open. Will there be danger of some filling their hives too full? How thin should the syrup be, and how much ought I to allow for each colony?

2. If I should leave a super of honey on each hive through the winter and remove it before clover blooms, would it extract all right? MISSOURI.

ANSWERS.—1. Without knowing how much honey is in each hive, it isn't easy to say how much you should feed. At any rate, you will hardly be in danger of crowding any brood-chamber if you give not more than 10 or 15 pounds of sugar (not syrup) for each hive. Hardly that much will be needed. Equal parts of water and sugar will work all right.

2. There is some danger the honey may be candied.

The Illinois Meeting

Owing to the raging influenza, the Illinois meeting held in December, had the smallest attendance it has had for years, barely 20 being present. Illinois rarely has a large attendance of beekeepers. This is more strange since the association is one of the largest in numbers in the United States, having at present nearly 500 enrolled members. This is probably due to the fact that the annual report of the meeting is published in book form.

However, if the Illinois beekeepers who read this could appreciate what they miss by failing to attend, more of them would go in the future. The personal intercourse, between members, the getting acquainted with leading beekeepers (we had Pettit and Miller this time), the occasion offered to ask questions to be solved, all combine to make the meeting both pleasant and useful.

At this meeting 24 questions on different subjects concerning bees were asked, discussed and answered. Beekeepers of Illinois, do not fail to attend future meetings.

We will give a short synopsis of this meeting in February.

Nebraska Meeting Postponed

Owing to influenza restrictions, the Nebraska meeting, mentioned elsewhere in this issue, is postponed indefinitely

Texas Beekeepers

Dallas County, Texas, beekeepers organized recently with 26 charter members. W. E. Joor, of Dallas, was chosen President, and A. D. Fraser, Secretary. The association will meet again the fourth Tuesday in January.

CLASSIFIED DEPARTMENT.

Advertisements in this department will be inserted at 15 cents per line, with no discounts of any kind. Notices here cannot be less than two lines. If wanted in this department, you must say so when ordering.

BEES AND QUEENS

GOLDEN QUEENS that produce Golden workers of the brightest kind. I will challenge the world on my Goldens and their honey-getting qualities. Price, $1 each; tested, $2; breeders, $5 and $10.
2Atf J. B. Brockwell, Barnetts, Va.

NO MORE QUEENS this season. Root's beekeeers' supplies.
A. W. Yates, 3 Chapman St., Hartford, Conn.

GOLDENS that are true to name. Untested queens, $1; 6, $5; 12, $9; 50, $35; 100, $67.50. Garden City Apiaries, San Jose, Calif.

BEES AND QUEENS from my New Jersey apiary. J. H. M. Cook,
1Atf 84 Cortland St., New York City.

FOR SALE—Pure 3-banded Italian queens, as good as you can buy with money, from June 1 to September 1.
J. F. Diemer, Liberty, Mo.

OUR BRIGHT ITALIAN QUEENS will be ready for shipment after April 15. Untested, 75c each; half doz., $4.50, or $8 per doz. Select untested, 90c each; half doz., $5.50, or $10 per doz. Tested, $1.50 each. Safe arrival guaranteed. Tillery Bros.,
R. 5, Box 1D, Georgiana, Ala.

FOR SALE—Bees by the pound for early shipment; safe delivery guaranteed.
H. E. Graham, Gause, Texas.

GOLDEN Italian QUEENS, NUCLEI AND PACKAGES—Untested queens, each, $1; 6 for $5; doz., $9; for larger lots, write for prices; also nuclei and packages. Booking orders now. L. J. Dunn,
No. 59 Broadway Ave., San Jose, Calif.

FOR SALE—From 1 to 100 strong colonies extra fine strain Italian bees, with winter stores; select tested queens in 1-story 8-frame single-wall hive, standard full depth self-spaced Hoffman frames; nearly all wired. If sold before January 1, $8 each; same colonies on frames without hives, $6 per colony. The bees are free from disease. F. o. b. here.
Wilmer Clark, Earlville, Mad. Co., N. Y.

QUEENS—3-banded Italians, from best stock; untested queens in April, May and June, one, $1; twelve for $10. Tested, $1.50 each; if you want as many as 50 queens, write for prices and discounts on early orders; no disease. Safe arrival and satisfaction guaranteed. O. D. Rivers,
Route 4, Honey Grove, Texas.

QUEENS—Bees by the pound, 3-banded and Golden Italians. The best of either. They are hustlers, gentle, cap their honey white, are very resistent to European foulbrood. Now that peace has been declared, our boys will be home for service. We believe the express companies will be able to deliver promptly. So we are also quoting prices by express. Booking orders now, one-fourth down, balance at shipping time. By parcel post, prepaid, one 1-pound package, $2.90; 2-pound, $5; 3-pound, $7 By express, f. o. b. here, one 1-pound package, $2.40; 2-pound, $4.25; 3-pound, $6.25. Select untested queens, $1.50 each; tested, $2.50; select tested, $3 each; 10 per cent discount on orders amounting to 25 packages or more. Add price of queen wanted. Send for free circular giving details.
Nueces County Apiaries, Calallen, Texas,
E. S. Ault, Prop.

FOR SALE—Italian queens and bees by the pound; early shipments; guaranteed safe arrival and no disease.
Brazos Valley Apiaries, Gause, Texas.

THREE-BANDED ITALIANS ONLY—Untested queens, each $1; 6, $5; 12, $9; 50, $35; 100, $67.50. H. G. Dunn,
The Willows, San Jose, Calif.

A NICE PACKAGE OF BEES—1-lb. package with untested Italian queen, $3.50; 2-lb. package with untested Italian queen, $4.50; 25 1-lb. packages or more (one order) with queens, $3 eacr; 25 2-lb packages or more (one order) with queens, $4.25 each. Reference, the Security Bank and Trust Co. of Wharton, Texas.
W. H. Moses, Lane City, Texas.

HONEY AND BEESWAX

**WE are in the market for honey and beeswax. Send best price on comb honey and sample of extracted honey. State quantities you have, also style, size and weight of package or section. Charles Israel Bros.' Co., Inc.,
486-490 Canal St., New York.**

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendered. The Fred W. Muth Co.,
204 Walnut St., Cincinnati, Ohio.

FOR SALE—Clover, heartsease, No. 1 white comb, $6.50 per case; fancy, $7; extra fancy, $7.50; 24 Danz, sections to case; extracted, 120-lb. cases, 30c per pound.
W. A. Latshaw Co., Carlisle, Ind.

FOR SALE—Michigan's best extracted honey in packages to suit. White clover, raspberry, milkweed, buckwheat.
A. G. Woodman, Grand Rapids, Mich.

FOR SALE—Ten cases extracted honey (70 per cent buckwheat), 25c per pound; two 60-lb- cans to case
H. G. Quirin, Bellevue, Ohio.

**WANTED—White or light amber extracted honey in any quantity. Kindly send sample, tell how your honey is packed and your lowest cash price; also buy beeswax.
E. B. Rosa. Monroe, Wis.**

FOR SALE—Forty cases No. 1 white comb honey, 12 to 15 oz. First decent offer f. o. b. here gets it. J. Gakler,
Route 1, Memphis, Tenn.

**WANTED—Comb, extracted honey, and beeswax R. A. Burnett & Co.,
6A12t 173 S. Water St., Chicago, Ill**

FOR SALE—12,000 lbs. white extracted honey in 60-lb. cans, cased; make offer.
J. N. Minkes, Box 525, Basin, Wyo.

FOR SALE—Fifty 60-lb. cans or extracted honey (clover and heartsease blend), 25c per lb. A. L Kildow, Putnam, Ill.

FOR SALE—Choice buckwheat honey, in cans or pails.
W. H. Hyde, New Canton, Ill.

WANTED—Extracted honey, all kinds and grades, for export purposes. Any quantity. Please send samples and quotations.
M. Betancourt, 59 Pearl St., New York City.

FOR SALE—Extracted honey; clover and buckwheat, put up in 60-lb. tin cans.
H. B. Gable, Romulus, N Y.

FOR SALE—60,000 lbs, strictly white clover extracted honey, extracted light colored, heavy bodied, fine flavor, in 60-lb. new cans.
J. B. Mason, Mechanic Falls, Maine.

WANTED

**WANTED—Your old combs, cappings or slumgum to render into beeswax by our high steam pressure wax presses.
Dadant & Sons, Hamilton, Ill.**

TRY AN ADD in this department to sell that good equipment which you no longer need. Our want ads do the business.

CASH for extracted honey, white and amber, in 10-pound cans. Thomas Lang,
1572 N. Halsted St., Chicago, Ill.

WANTED—Samples of honey from the different plants for our office collection. We will pay for the honey and send a parcel post can for mailing. Samples to be of value should be from one kind of flowers only and unmixed with honey from other sources, as nearly as possible. A pint will be sufficient for each kind, but we wish to secure samples of the same kind of honey from several widely separated localities.
American Bee Journal, Hamilton, Ill.

WANTED—December, 1917, and January, 1918 numbers of the American Bee Journal. Will pay 10 cents per copy.
American Bee Journal, Hamilton, Ill.

WANTED—Foundation Machine. State size, kind, condition, when bought new, and price asked. Grand Haven Pattern Works,
Grand Haven, Mich.

EXCHANGE for bees, a piece of property 200 ft. front, 150 deep, located in a suburb of Jacksonville, Fla. A fine building location, shaded with large live oak trees and a beautiful garden spot, valued at $1,800; can consider a good exchange on good healthy bees.
Ad. Schmidt,R No. 1, Two Rivers. Wis.

WILL PAY CASH or give $48 incubator for honey extractor, or repeating shotgun.
Lorenzo Clark, Winona, Minn.

WANTED—Your order for "Superior" Foundation. Prompt shipments at right prices.
Superior Honey Co., Ogden, Utah.

SUPPLIES

FOR SALE—200 4¼x4¼x1⅞ beeway supers for ten-frame hives; nailed, not painted; brand new; complete with sections, separators, etc., a a very low price. Write
L. W. Mundhenke, E. Dubuque, Ill.

FOR SALE BARGAINS—The following shop-worn goods in good condition:
5 10-frame dove. bodies with frames, at 90c each.
35 10-frame dove. bottoms, at 35c each.
30 10-frame dove. metal covers at 78c each.
5 one-story 8-frame Wisconsin hives at $1.67 each.
30 10-frame Wisconsin supers at 59c each.
3,500 4¼x1⅞ 2-side sections, per M $6.30.
10 5-gallon round jacketed cans at 65c each.
Hives and supers are packed in crates of 5, and sections in crates of 500.
Dadant & Sons, Hamilton, Ill.

ALWAYS the best place to get your supplies is at the same old place of H. S. Duby & Son, St. Anne, Ill. No one can beat us on price. Free price list.

FOR SALE—100 three-story 10-frame colonies, mostly 1918 Berry queens, Root hives, metal tops, wired frames; your choice from about 130 colonies; can furnish good location for 1919; alfalfa, sweet clover and heartsease.
Harry A. Huff, Chapman, Kans.

FOR SALE—125 10-frame shallow supers (Root's goods), free from disease; power circular saw and 2 horse power gasoline engine. E. R. Gooch.
Farmerville, Texas.

FOR SALE— Cheap, a new electric motor, just right for honey house or work shop; 60 cycles, 1-phase, 110 volts, 12 amp.; 1 horsepower constant duty. Inquire of H. M. Leach & Sons, Hiram, Ohio.

FOR SALE—38 Danzenbaker shallow extracting supers at $1 apiece, with drawn combs 8-frame size; 50 comb-honey supers, 8-frame size, part with drawn comb and the rest full sheets of foundation; hand-made, painted white, at 60c apiece; 25 10-frame size comb-honey supers, part dovetailed and the rest hand-made, at 35c apiece. If party takes them all, empty of sections.
James D. Benson, Juda, Wis.

FOR SALE—At a bargain: 200 8-frame hive-bodies; 150 bottoms, 150 covers, 110 queen excluders and 25 lbs. Dadant's extra thin foundation. Write for prices.
F. E. Matzke, Juda, Wis.

FOR SALE—1000 Standard bee hives in flat 8 and 10-frame sizes; supers with sections; full depth and shallow extracting frames. Entire lot new and strictly first-class. I will sell in large or small quantities at low prices.
J. O. Hallman, Helena, Ga.

FOR SALE

FOR SALE—Cowan extractor and knife; neither used; first $20 takes both.
Chris Smith, Glenwood, Mo.

OUR PRINTING SERVICE is unexcelled. If you want labels, stationery or circulars, write for samples and prices.
American Bee Journal, Hamilton, Ill.

**FOR SALE—Cedar or pine dovetailed hives; also full line of supplies, including Dadant's foundation. Write for catalog.
A. E. Burdick, Sunnyside, Wash.**

FOR SALE—A nice little cotton farm, 60 acres; a good location for a beeman. Price, $1,200; $650 cash, balance on 5 years' time, 8 per cent interest. Joe. J. Widmer,
R. 5, Box 107-a, Franklin, Texas.

FOR SALE—One No. 15 Cowan two-frame reversible extractor. This extractor was damaged in shipment, the can being bent. It has been straightened, and for all practical purposes is as good as new, but we cannot sell it for a new machcine. This extractor sells regularly at $35. First check for $20 gets this machine.
Dadant & Sons, Hamilton, Ill.

FOR SALE—Barnes saw, two-frame extractor, hives and extracting supers in flat, at a bargain; cash or honey.
The Liberty Press, Box 224, Shenandoah, Ia.

SONG—"The Pl.. of the Bee," or "The Honeybee Doing Its Bit." A song for the children as well as for the grown-ups. Sent to any address on receipt of 15 cents.
The Cutting Publishing Co.,
910 Merchants Bank Bldg., Indianapolis, Ind.

FOR SALE—"Superior" Foundation (Weed process). Quality and service unexcelled.
Superior Honey Co., Ogden, Utah.

SITUATIONS

WANTED—Two young women want work in modern apiary near Los Angeles or Colorado. Experienced one can begin in March, the other June 15.
M. P. Sturdevant, Gooding, Idaho.

WANTED—Men of energy and character, clean habits, as helpers in our ten apiaries; over 1,000 colonies; 1918 crop over 100,000 pounds; best chance to learn; need one experienced man and students. Write immediately, giving age, height, weight, experience references and wages, *all in first letter.*
E. F. Atwater, Meridian, Idaho.

Crop Report and Market Condition

Compiled by M. G. Dadant

For our January report, which will likely be the last one of any length for a few months, we asked the following questions of reporters:

1. Have you any honey left on hand unsold; if so, how much and at what price are you holding it?
2. How is the honey moving and what are the prices?
3. In what shape did your bees go into winter quarters?
4. What is the outlook, pasturage, for next year?
5. How many bees do you expect to have in 1919, compared to 1918? Do you expect to make much increase?

HONEY ON HAND

A striking characteristic of answers to this question is that there is relatively little honey left in the hands of the producers, and what is left is generally being held to be sold out piecemeal to the local markets. Some of the lots on hand and prices expected wholesale are as follows:

1,500 pounds Connecticut extracted at 30 cents.
One ton Kentucky at 25 cents.
12 barrels Alabama at 25 cents.
12,000 pounds Colorado at 23 cents.
240 gallons Louisiana at 20 cents.
18,000 pounds Michigan at 27 cents.
12,000 pounds Colorado at 25 cents.
5,000 pounds Colorado at 27 cents.
75 cases Utah at $5.00.
10,000 pounds California amber at 22 cents.
1,200 pounds California white at 24 cents.

It is evident from these reports that practically all beekeepers were able to get satisfactory prices for their honey. In fact, very probably the dealers are well stocked up with honey and wondering just what the market will do.

The fact that the War Trade Board has removed the restrictions on honey imports, lets in large quantities of Cuban and West Indian honey which has been seeking a market.

This has had an especially bad effect, since it has been very hard to export honey as yet, owing to the restrictions of the same War Trade Board. But we have just received a wire (Dec. 19) from the Board in answer to ours, stating that all restrictions on honey export are removed December 20, and that after that date honey may be shipped to Canada, Great Britain, France, Italy, or their colonies without individual export license.

MOVEMENT OF HONEY

In the local markets honey is going very well, where the beekeeper has any to furnish. In fact, the local markets are not being furnished to any extent except as honey is sent in by the big bottlers.

In the larger markets and with wholesalers the demand seems to be slack. This is mostly due to the signing of the armistice; and also to the shipping in of West Indian honey in competition with that of the States.

Foreign markets are still bare of honey and the demand good at high prices, so that in the course of a few weeks, when shipping becomes easier, there should be no trouble in getting satisfactory prices by means of exporting. There is no doubt a feeling of uneasiness on the part of the jobber as to just what the market will do, but we do not see how prices can drop very much before the next crop comes in, as there is such a small amount left in the hands of the producer. Our idea is that the market will stiffen just as soon as shipping space becomes a little more easily available.

SHAPE OF BEES FOR WINTER

In reading the reports coming in I have been struck with the number stating that their bees went into winter rather light in stores, especially in the eastern and central States. This is due to the fact that the fall crop was small in most localities, and to the difficulty of getting sugar. In most cases there is combined with this a shortage of bees in the hives, also due to the same cause. This may mean rather severe losses during the winter. Starvation will especially be a danger, since bees are apt to use more honey in such a mild winter as we are having so far.

The sugar restrictions are now removed, and it behooves every beekeeper who has colonies lacking stores to make the loss good either as early in spring as possible, or yet this winter by feeding sugar candy (properly made).

Most reports indicate that bees went into winter quarters in good shape, a few from the northwest also indicating light colonies.

PASTURAGE OUTLOOK

Pasturage outlook is better than a year ago, a comparison of reports for the two years shows. It is early to base conclusions on pasturage outlook now, especially in the western States. But the east and most of the central States have had good fall rains, which has put clover in fair to good condition to survive the winter.

The prospects in California seem to be better than a year ago. There have been a number of early fall rains and the weather is seasonable, all tending to a better outlook for the honey plants.

It is in Texas, however, that prospects show the greatest improvement over a year ago. Bountiful fall rains have not only made good fall flows in many localities, but they have started the vegetation throughout the State and beekeepers are hoping for a return to normal conditions after some of the worst seasons they have ever experienced. One or two reporters state that it will take two or three years to replace all the perennial plants and shrubs which have been killed out by the drought of the bad seasons.

BEES IN 1919

Practically all losses of the winter of 1917-18 have been made good by increase during the past summer, except in the State of Texas, where it will take another summer to place them back to where they were before the bad years came, and this deals alone with the commercial beekeepers. It will take much longer than this to make up for the losses on the part of the smaller and amateur beekeeper.

The whole country over, there are, without doubt, more bees than a year ago.

Nearly all reports are to the effect that there will be some increase made during the coming spring, this increase ranging from just enough to make up losses, to 100 per cent, the most of the reporters stating that they would make from 25 to 50 per cent increase.

The largest beekeeper in the southwest expects to increase his holdings from 7,000 to 10,000 colonies, while another in the mountain States of the west will increase from 5,000 to 7,000 colonies. The latter beekeeper, by the way, raises his own queens, having a queen breeder whom he pays at the rate of $8 a day to do the work.

BEES AND QUEENS FOR NEXT YEAR

With very few exceptions, beekeepers have very little doubt but that they will be able to secure all the bees and queens they will require. Several have made contracts or placed orders in advance for their season's requirements. Many more are increasing solely by division, while others do not expect to have to requeen till late sumer, when the demand for queens is not so great.